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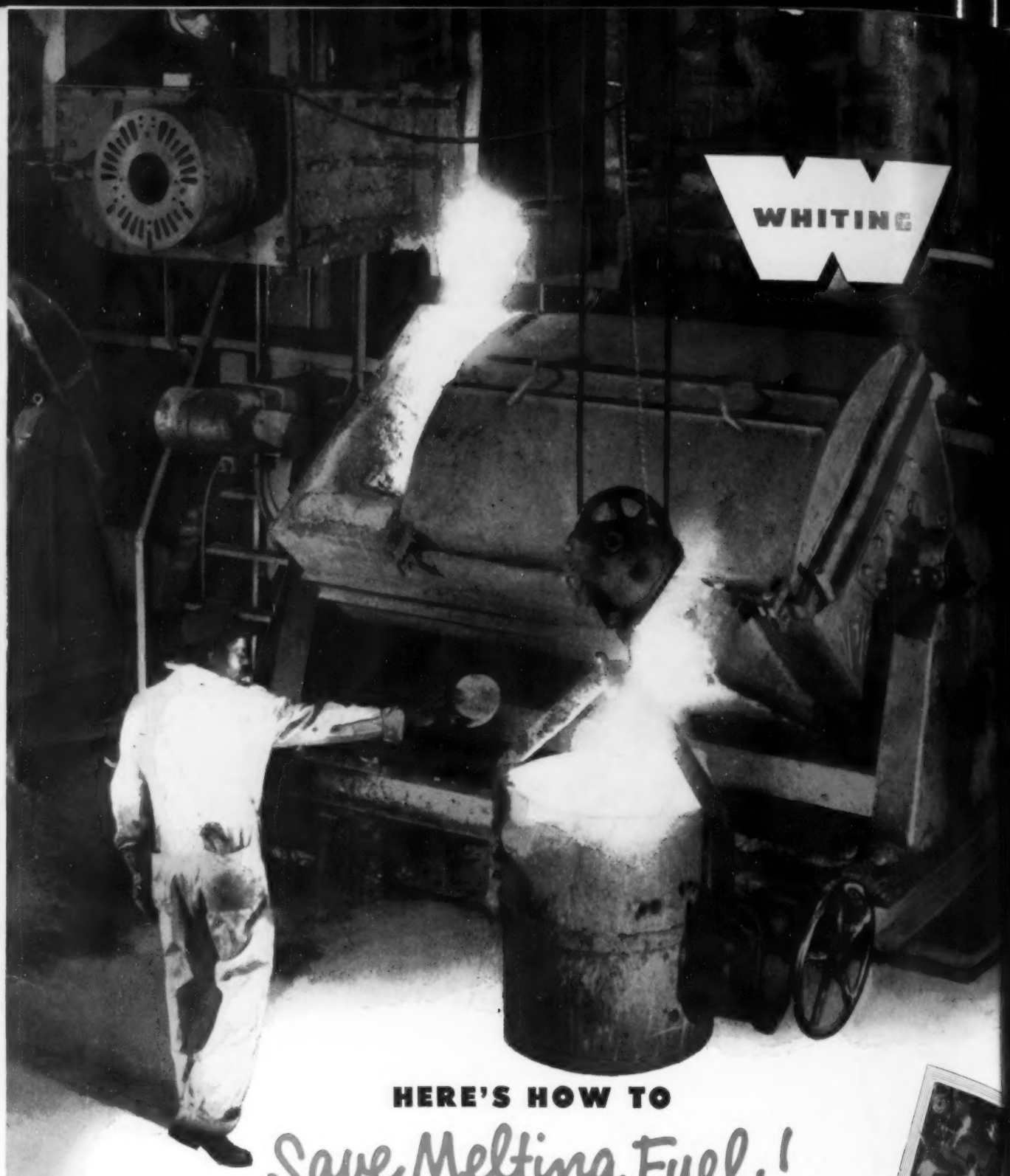
Iron Age

NATIONAL METALWORKING WEEKLY

July 31, 1952

NTS PAGE 2



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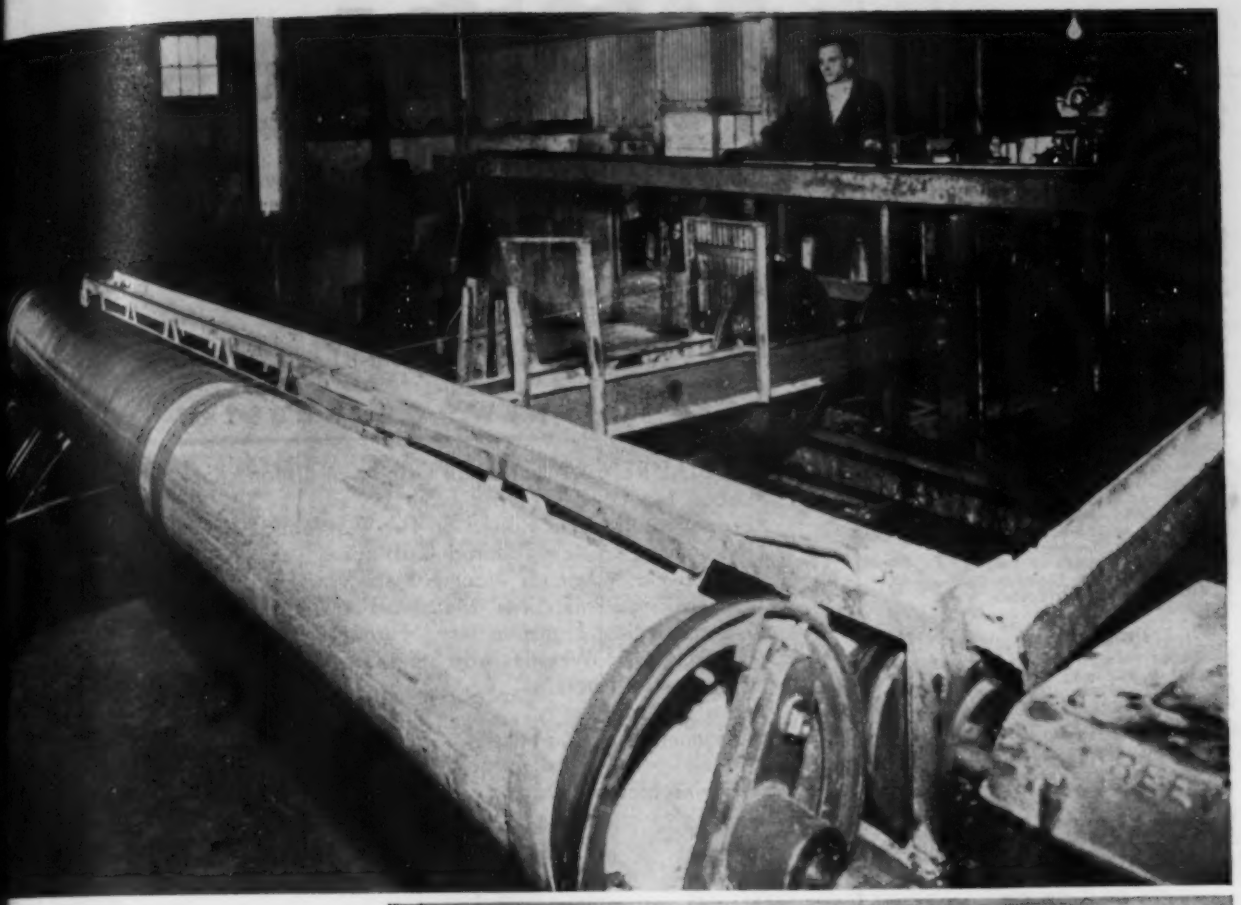

After a concrete lining is spun centrifugally poured inside a steel cylinder, Bethlehem high-tensile steel wire is wound around the cylinder.

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Photographs courtesy of Lock Joint Pipe Company

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IRON AGE

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THE IRON AGE

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CONTENTS

★ Starred items are digested on opposite page.

DIGEST

of the week in metalworking

STRIKE'S END STIRS HOPES FOR NEW ERA

PAGE 37 Settlement of the steel strike has raised industry's hopes for lasting labor peace. Both sides show scars from the fight, and neither really won. The union won substantial wage gains but failed to win on the important issue that caused and then prolonged the strike—the union shop.

LABOR SPOTLIGHT TURNS ON JOHN L. LEWIS

PAGE 38 John L. Lewis has finally served notice of 60-day contract termination. He has been eligible to do so since Feb. 1 of this year. Coal stocks above ground are at one of the highest levels in history. Captive miners have had no work during strike, commercial miners about 2 days a week.

NEW, MODERN FERROALLOY PLANTS UNVEILED

PAGE 39 Two new plants of Vanadium Corp. will make metallic silicon, chrome silicide, remelt aluminum alloys and ferrovanadium. Models of high efficiency, they have excellent sites. Company is prepared for further expansion to meet anticipated rise in silicon demand. Output has already started at one.

STEEL STRIKE CRIPPLES DEFENSE OUTPUT

PAGE 41 Impact of the steel strike will be felt for months to come by defense contractors. "No enemy nation could have inflicted more damage" Defense Secretary Lovett said last week. He claimed it will take at least a year for the defense program to recover. And a shell shortage is looming.

STRIKE HURTS NEW MODEL INTRODUCTION

PAGE 60 New 1954 models were to be introduced as a spur to lagging sales. But the car market will be firm as the steel shortage in Detroit will determine total output. Price hike in steel, conversion may mean higher auto prices. Estimates put the resumption of full car production at 3 weeks away.

STRIKE TAKES TOLL OF TAX COLLECTIONS

PAGE 65 In addition to having disrupted the defense program, the steel strike has cut deeply into tax revenue. Impact will be felt through drop in excess profits, corporate and personal income taxes. Tax plans for next year are made. Attention concentrated on meeting aftermath of defense boom.

END OF STRIKE SAVES CANNING INDUSTRY

PAGE 69 Last week's settlement of the steel strike came in the nick of time to ward off a mortal blow to the western canning industry. Some perishables will be lost, but most crops can be saved. National Production Authority is rushing tinplate, and mills are speeding to get back into production.

MELT METALS IN MIDAIR FOR HIGH PURITY

PAGE 83 Refining of certain high melting point metals is made difficult by the fact that they pick up impurities from the crucibles in which they are melted. Westinghouse solves this by not using a crucible. Metals are suspended in midair by an electromagnetic field and melted by induction heat.

AUSTEMPERED BLADES ARE HARD AND TOUGH

PAGE 88 To gain hardness and toughness, lawnmower blades are austempered. Blades, of SAE 1060 and 1070, are shaped before heat treating at hardening temperature of 1550° to 1600°F. Transformation temperature is 600°F. After heat treat, blades test 48 to 52 Rc. Blades are relatively stress-free.

SOLVENT FLOOD CLEANS, INHIBITS RUST

PAGE 98 Developed to reduce cost of preparing tank hulls for painting, a new solvent combines three operations into one. It removes grease and tar, cleans off chips, and gives a rust-inhibitive phosphate coating. Solvent is applied by hose, reacts, and is rinsed off. Surface is then dried by an air blast.

STEEL CONSUMERS WILL FIND SLIM PICKIN'S

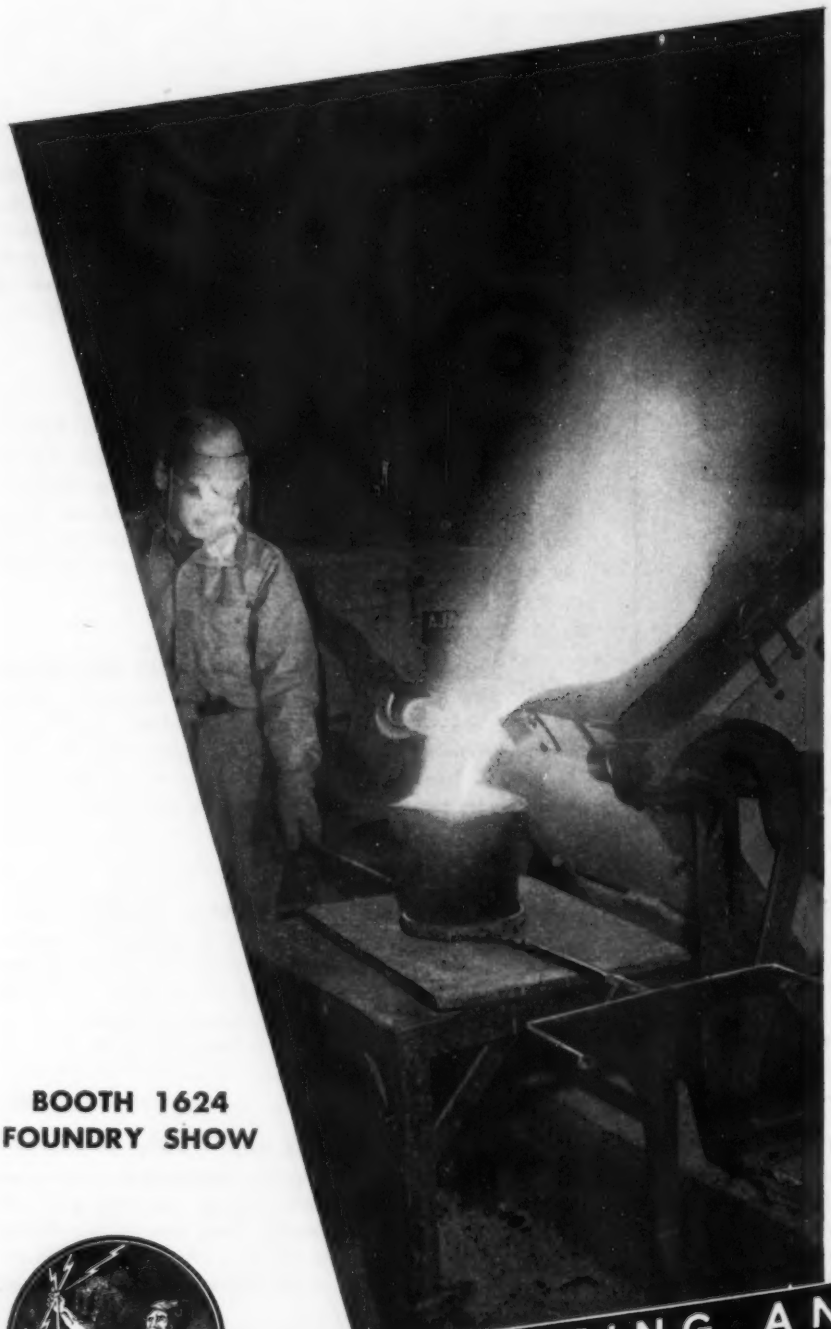
PAGE 115 The British have a word for what faces steel consumers —austerity. The strike is over. But steel users will find slim pickin's for many months. Some may continue to feel its effects for a year. There will be a lot of confusion in the market as they start one of the fiercest steel scrambles yet.

BASIC GEAR GRINDING METHODS COMPARED

NEXT WEEK Grinding can correct gear tooth form and spacing errors. It is particularly useful after hardening. Each of the three basic methods, form grinding, line grinding, and point grinding, has advantages and limitations. Hardened and ground gears can make transmissions lighter, smaller, cheaper.

Save critical alloys

WITH AJAX-NORTHRUP INDUCTION MELTING



High speed melting enables Ajax-Northrup high-frequency furnaces to recover all of the nickel in the charge, 99% of the chromium, 95% of the molybdenum . . . consistently high percentages of every alloying element.

The difference between these figures and the performance of ordinary furnaces represents *savings* . . . both of money, and of critically hard-to-get alloys.

For instance, a 2% chromium saving in one Ajax-Northrup equipped foundry saves ten tons of ferrochrome a month, or $60,000 a year. (Melting capacity 1,000,000 lbs. a month—63% ferrochrome @ 25¢/lb.)

$60,000 a year pays for the furnaces in short order—and the chromium saved is enough for an extra 70,000 pounds of 18 and 8 stainless steel a month.

The figures are slightly different for other critical alloying elements. But the arithmetic's the same—the total savings frequently just as impressive.

Besides saving metals, Ajax-Northrup furnaces melt at extremely high speed, with composition controlled within 0.25%, pouring temperatures within 20°F.

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The Iron Age
FOUNDED 1855

Was It Worth It?

ECONOMIC features of the steel contract were settled before the strike began. Union power, aided by one-sided government support and a heavy demand for steel, assured the steel union a big victory.

But there was a strike—one of the costliest in steel history. The issue was simple—should a worker be forced into a union in order to keep his job? Could he quit the union without losing it?

On that issue alone, losses in the steel industry were: $450 million in wages; $210 million in Federal taxes; $100 million in profits; and 19 million tons of steel. Dislocations and losses in other fields because of the strike were as great if not greater.

Was the strike worth this? Yes, it was. Stupid bungling by the Administration helped to cause and prolong the strike. Management-union relationships reached a new low. A basic individual right was at stake. A return to better company-union understanding without government meddling was necessary.

Why did Phil Murray hold out until tremendous losses were piled up? Certainly he had sleepless nights as he debated with his conscience and stewardship responsibilities. Mr. Murray did not trust the steel industry. He believed it was out to bust the union.

Why did Ben Fairless provide the implacable and tenacious leadership in the industry fight for the right to work without being forced to join or stay in a union? He could not see why Mr. Murray would not believe steel companies favored union security—without compulsory membership.

At this point the costly strike needed the human equation. Where was it to come from? Everything else had been tried but had failed.

Phil Murray trusts and respects Ben Fairless. Ben Fairless admires and has confidence in Phil Murray. Both are fallible and human. Both have that God-given ability to have faith and confidence in people.

Mr. Fairless will tour U. S. Steel plants with Mr. Murray on a joint crusade for better management-union understanding. Mr. Murray gave up his demand for a union shop.

Men like them *are* the human equation. But both know that government interference could send their good work down the drain.

Tom Campbell

Editor

Dear Editor:

Letters from readers

Electrolytic Grinding

Sir:

Your article "New Machining Techniques Evaluated" which appeared in the Mar. 20 issue was read with much interest.

We are concerned with the possibility of the electrolytic grinding of titanium. From your Table I it is apparent that none of this work is being done on production scale to date.

Could you give us information as to whom we could contact to investigate the applicability of this process to our problems?

I. FRIEDMAN
Materials & Process Research Div.
Curtiss-Wright Corp.
Wood-Ridge, N. J.

We suggest you contact the following who are familiar with what is being done: Dr. J. Glasser, staff metallurgist, Minerals & Metals Advisory Board, National Research Council, Div. of Engineering & Industrial Research, Washington 25, D. C., and L. H. Metzger, president, Super-Cut, Inc., 3418 N. Knox Ave., Chicago 41, Ill.—Ed.

Iron Powder Backup

Sir:

We have noted with interest the article on welding with iron powder backup which appeared in your May 8 issue.

I am sure that this article would be of interest to the more than 34,000 readers of *Industry and Welding*. Therefore, I would like to have your permission to reprint this article in a forthcoming issue of our magazine.

C. BERKA
Associate Editor
Industry and Welding
Cleveland

Time Saver

Sir:

Reference is made to the item in your July 10 Newsfront page about a new quick closing door for vulcanizing in chemical industries using pressure vessels.

We would appreciate it if you could advise us where we could obtain more information on this subject.

E. L. CHERENSON
Artisan Metal Products, Inc.
Waltham, Mass.

Further information may be obtained from Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 30, Pa.—Ed.

Catalytic Process

Sir:

Your June 26 issue, p. 61, describes a new catalytic process for converting industrial fumes and smog to heat energy.

To correct your records we respectfully refer you to chapter 23 of "Air Pollution" which describes the recovery of heat from fumes by catalytic combustion, as presented by the writer during the 1950 U. S. Conference on Air Pollution.

The process, covered by our pending patents, is already converting to useful heat on over 150 installations with individual service-free performance records exceeding 15,000 operating hours.

R. J. RUFF
President
Catalytic Combustion Corp.
Detroit

Sorry if we implied that catalytic fume control and heat recovery was a new idea. But we felt that the Houdry catalytic process was relatively new (2 years old) and this was a new application of this new process.—Ed.

Hot Extrusion

Sir:

Will you please tell us where we can get more information on the extrusion of cast iron slugs as mentioned on p. 53 of the June 26 issue of your magazine.

T. R. ASHWORTH
Methods Engineer
Gorham Mfg. Co.
Providence, R. I.

Write to Mr. Jerome Strauss, Vanadium Corp. of America, 420 Lexington Ave., New York, N. Y., for further information on the extrusion of cast iron slugs.—Ed.

Moving Mold

Sir:

On p. 69 of your July 3 issue I note the first item on a moving mold casting machine for 10-gage steel strip and the statement that a large brass mill has ordered a similar machine.

Could you please advise me who is building equipment for such service?

E. S. STRANG
Vice-President
New Haven Copper Co.
Seymour, Conn.

For more details contact Mr. William Hazelett, Hazelett Strip Casting Co., 179 Hamilton Ave., Greenwich, Conn.—Ed.

Machining Titanium

Sir:

We would like to have 12 reprints of the article "How To Machine Titanium" which appeared in your Apr. 17 issue.

E. D. WIARD
Secretary—Research & Technical Committee
Metal Cutting Tool Institute
New York

Fatigue Cracks

by Charles T. Post

Plenty of Poi

Life in the Hawaiian Islands, as we had always envisioned it, is one long, languid afternoon of lying on the beach fanned by soft skinned native beauties in grass skirts. This is followed by a simple repast of fish and poi before retiring to the grass shack. Cash, and consequently work, are entirely unnecessary.

Our dream, due to a news release just received from the Office of Price Stabilization, is shattered. Says the release:

"Three poi manufacturers in Oahu, Hawaii, have paid the U. S. Treasury $5,270.76 as a result of overceiling sales of poi between February 15 and September 3, 1951, Lambert S. O'Malley, acting OPS Director of Enforcement, announced today.

"The settlement represents single damages, inasmuch as no evidence of wilfulness or lack of practicable precautions was found. . . .They represent the largest amount ever collected by the Hawaii Office for OPS violation. . . ."

The next case mentioned concerned an overcharge for processed rags.

Fie on you, Lambert S. O'Malley, and a pox on processed rags. You've gone and spoiled it all. Until you and the OPS came along, we'll wager that $5,270.76 would have bought all the poi in the Islands. Shows what bureaucracy can do to our paradise.

Punch

A few weeks ago, we told you about Lucille Jackson, the chem librarian at Penn State, who collects ticket punches, or, rather, the individual scraps that are punched out of railroad tickets.

Just to prove the influence of your f.f.j. every minute of the day or night, Miss Jackson writes:

"You will be interested to know that I have received a letter from one Edward Weiler of New York who wrote that he was just reading that paragraph on the train from New Brunswick to New York when the conductor approached him. So prompted, he saved the punch and sent it to me."

Who knows, this very paragraph may be read by a loyal reader on the train from London to Glasgow, and Miss Jackson will have one more punch to add to her collection. Her address is Pennsylvania State College, State College, Pa.

Aptronym

When the first ballot votes were being tallied at the Democratic convention last week, we were gratified to hear, during a poll of the Kansas delegation, the voice of Tally W. Daniels. And we understand that, out in Cleveland, a Mr. Ice lives on Snow Rd.

Puzzlers

The cow in last week's puzzler could graze in 89,498.51 sq ft, or a little more than 2 acres.

The triangle problem has brought forth answers from L. Sielsch, Textile Machine Works; R. W. Huff, Canton, Ohio; R. C. Cooper, Westinghouse Electric Corp.; R. W. Shank, International Harvester Co.; M. M. Popernik, Meter Devices Co.; C. A. Pipenhagen, Jr., Capson Mfg. Co. and T. Emaus and F. Cook, Grand Rapids Metal Craft Co.

L. J. Harden, Douglas Aircraft Co., poses this one: During the pioneering in the West, a trapper lost his way in Indian territory. He knew that two tribes of Indians were settled in this territory, namely the Crees and the Crows. He also knew that the Crees were hostile towards the white men, not to the extent of doing physical harm but they would never under any circumstance truthfully answer a question asked by a white man. The Crows, on the other hand, would always tell the truth.

As the trapper wandered aimlessly down a hillside, he saw three Indians approaching him in single file. Knowing that only a Crow would tell him the true direction to his camp, he stopped them and asked the first Indian, "Are you a Cree or a Crow?" The first Indian mumbled something the trapper didn't hear. The trapper then asked the second Indian, "What did the first Indian say he was?" The second Indian replied, "He said he was a Cree." The trapper then asked the third Indian, "What did the first Indian say he was?" The third Indian replied, "He said he was a Crow." Which Indian did the trapper ask for directions and how did he know they would be the right ones?

The Iron Age
FOUNDED 1855
News Section

STEEL: Strike's End Stirs Hopes for New Era

Industry, labor both show marks of fight . . . USW got most demands, but not the union shop . . . See possibility of good future . . . Both leaders show sincerity—By J. B. Delaney.

Out of the bitterness and hardship of the longest steel strike in history may come an era of sound industrial relations.

The strike left scars that will be a long time in the healing. It was a knock-down, drag-out fight that left both sides exhausted and neither side a winner.

Industry leaders were vilified—not only by leadership of the striking union, United Steel Workers of America (CIO)—but by labor-conscious government officials as well, notably President Truman.

Both Had Losses — The union won almost—but not quite—everything it wanted. It lost on the one important issue that caused the strike and prolonged it once underway—the union shop. Its members suffered an economic blow that plunged them deep into debt, reduced some to actual want. Industry also suffered economically.

These things are not easily forgotten, perhaps never will be.

But practical industrial relations people see a glimmer of hope. That hope is based on the belief that a byproduct of the strike will be a healthier mutual respect than at any time in the 16-year collective bargaining relationship of the union and the industry.

No Union Shop — For the first time the union failed to win a complete victory on the important issues. The industry isn't going to crow about it, but there is no doubt it won its battle against "compulsory unionism." Clause finally agreed upon gives the worker absolute freedom of choice on whether he (1) wants to join the union, and (2) once in, wants to continue his membership.

This is important. The union now knows it can press the industry only so far, and no farther.

It may try again when the new contract runs out 2 years from now. But it may think twice before precipitating a battle such as the one it has just come through.

Neither Wants Strikes—A bitter strike may be a poor foundation for building improved industrial relationships. But despite whatever bitterness continues to plague the union and the industry, both sides are practical enough to want to avoid the economic losses and public condemnation suffered by both sides as a result of the strike.

Both Ben Fairless, president and chairman of U. S. Steel Corp., and Philip Murray, president of USW, indicated after the White House-sponsored conferences that led to the settlement that they realize this.

To some, the "Ben" and "Phil" with which the two men greeted each other during the Washington meetings was so much window dressing. Appearance of Mr. Fairless before the union's International Wage Policy Committee could have been window dressing, too.

Both Sincere—But it could also mean sincere recognition by Mr. Fairless and Mr. Murray that the union and the industry have a lot of fence-mending to do to stabilize industrial relations in steel. They know it can be done because they have seen it happen in the coal industry, once the horrible example of how not to get along. John L. Lewis, United Mine Workers president, and Harry Moses, chief negotiator for the coal producers, have proved that in their last agreements.

After the settlement was announced, the smiles of relief by Mr. Murray and Mr. Fairless were genuine — not merely for the photographers.

There was a ring of sincerity in the hope expressed by Mr. Fairless that the strike was the last "we will ever witness in our great industry" Mr. Murray's echoing of this sentiment sounded just as sincere.

MEETING: Benjamin Fairless, right, U. S. Steel Corp. chairman, greets Philip Murray, USW head, as they arrived at the White House last week to discuss the steel strike with President Truman.

COAL: Lewis Signals Wage Talks

Sends 60-day contract termination notice to Moses . . . New demands not known . . . Pay boost, safety probable main points . . . Stocks above ground are high—By W. V. Packard.

John L. Lewis usually does things in his own time and in his own way. So it was last Wednesday when he finally served notice on the soft coal industry of 60-day contract termination. This means that the present contract between the bituminous coal operators and the United Mine Workers will expire Sept. 20—if a new agreement is not reached before then.

Notice was sent to Harry M. Moses, president of the Bituminous Coal Operators Assn., and chief bargainer for the coal industry. It was Mr. Moses who worked out the first strikeless wage contract with Mr. Lewis last year.

The United Mine Workers chieftain gave no hint of contract demands he will make. When he gets around to spelling them out they will probably include: (1) A substantial wage demand, possibly matching the 16¢ an hr just won by the steelworkers; (2) shortening the present 8-hr, portal-to-portal day to 7 hr; (3) an increase in the 30¢ per ton royalty now assessed for the UMW welfare and retirement fund; and (4) greater provision for safety.

Slow Business—Mine operators are hoping the union leader will temper his demands with the knowledge that coal business has been very slow this year. Mr. Lewis has shown in the past that he is aware of industry problems.

Coal business has been getting more sluggish right along. Last winter customers bought more than they needed as a hedge against a possible coal stoppage this spring. When it didn't come, they had to reduce their buying because of storage limitations and the amount of cash tied up in inventory.

Then the steel strike hit, taking coal's biggest customer completely out of the market. Captive miners were laid off almost immediately, have had no work since. Buying from commercial operators sagged even more. Some commercial miners have been working no more than a couple days a week.

Coal stocks above ground are estimated at 80 million tons, one of the highest levels in history. The steel industry has enough coal on hand to operate 70 or 75 days. Utilities have stocks running almost double that amount.

Takes His Time—Mr. Lewis had been eligible to serve notice of contract termination since Feb. 1. His failure to do so aroused much speculation with the usual number of explanations (none from Mr. Lewis). He did not want to share center stage with the steel controversy. Huge coal stocks above ground had reduced his bargaining position. He was waiting to see the outcome of the steel settlement. And so the explanations for waiting piled up, while the mine leader bided his time.

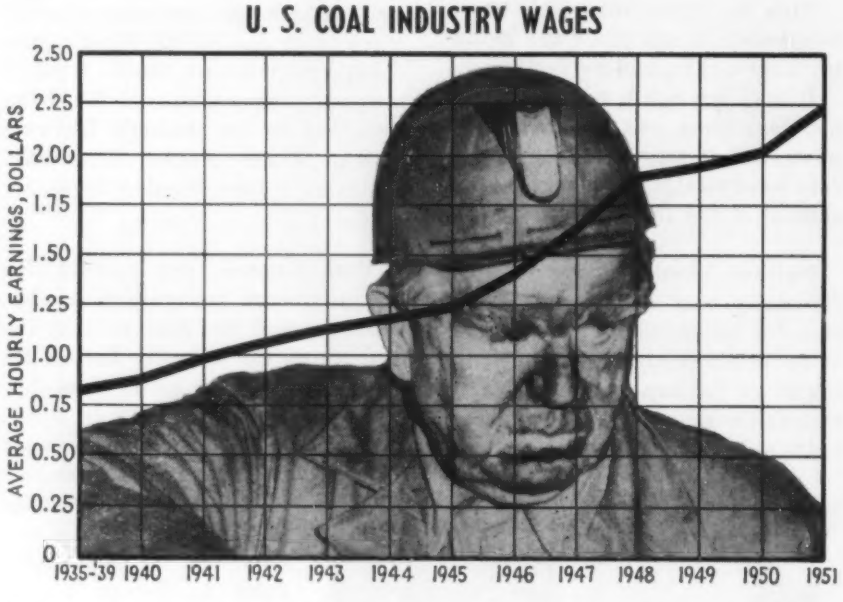
That time came last Wednesday. Coal operators were mildly surprised. Some were relieved because the long, suspenseful waiting was at an end.

From Mr. Lewis' standpoint the 6-month wait had done one thing at least. It had shifted coal wage contract negotiations from spring to fall, or from a period before weakest coal demand to a period before strongest demand.

Chances are Mr. Lewis would like to get a new contract signed and sealed before the election.

New Era — The nearly 400,000 miners are now working under a contract negotiated by Messrs. Moses and Lewis in January 1951. It became effective Feb. 1, 1951, marking a new era of peace in coal.

The same two men will again be the central figures in bargaining a coal contract. The contract they quietly negotiated over a year and a half ago left the industry and the country gasping. Industry hopes these two old friends can do it again.



FERROALLOYS: New Plants Shown

Two new Vanadium Corp. plants are models of modern design equipment . . . To make silicon metal, chrome silicide, aluminum, ferrovanadium . . . Growth planned—*By D. I. Brown.*

Vanadium Corp. of America unveiled its two new ferroalloy plants to the board of directors and a few members of the technical press last week. Via special train, the group visited Cambridge, Ohio, where ground was recently broken for a $3.5 million facility and Graham, W. Va., where production of ferrosilicon has already started.

Vanadium has left no stone unturned in equipping the Graham plant with the newest and best equipment available. Five electric arc furnaces at Graham, all of which are now energized, are capable of producing 50,000 tons of ferroalloys annually. To date, the firm has spent $8 million and planned expansion will bring its total investment to about $12 million at Graham alone. There is no government money in either of these new plants.

Good Site—The 400 acre Graham plant is located on the Ohio River 55 miles southwest of Parkersburg. Abundant low-cost power, good transportation facilities and close proximity to raw materials and markets governed this choice.

This plant features the latest equipment for handling incoming materials. The furnaces are charged by overhead mixing and conveying methods. The latest and best equipment for crushing the cast slabs, screening to different sizes and automatically weighing and packaging in drums has been installed.

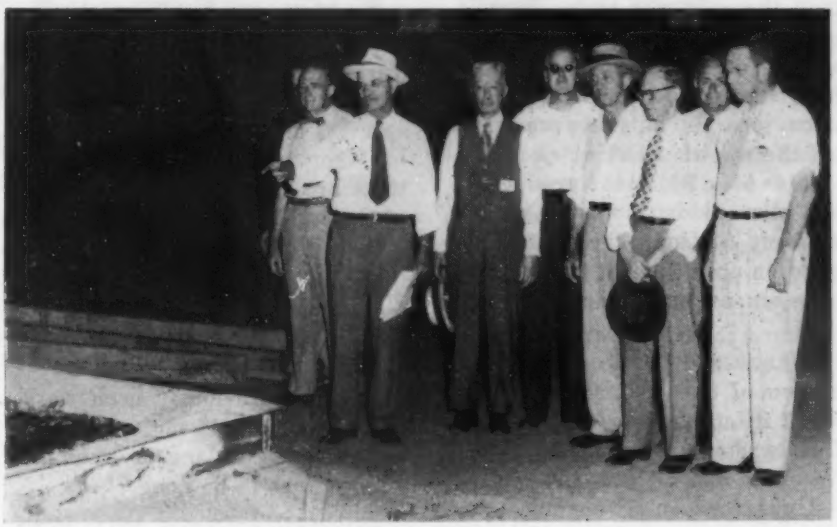
Vanadium has pioneered some of the developments in the new phase of the ferroalloy industry where many bulk products are now being palletized or packaged in special containers. Brightly colored containers, plainly marked, make it easy for furnace help to spot the ferroalloy they want to use. The containers permit clean and compact storage which has helped cut housekeeping in melt shops.

Anticipate Demand Rise — All grades of silicon and chrome silicide will be produced in addition to silicon metal. George C. Floyd, vice-president of operations, said that one furnace will soon be put on silicon metal, in great demand for the production of silicones. If and when demand increases, a second furnace will be swung over to making 98 pct pure silicon metal.

Silicon is the most abundant metal in the earth's crust. We are just awakening to the huge potential of this element as a metal. Although the technology of silicon has not been adequately explored, its characteristics promise a very wide and bright future. Vanadium has kept aware of these possibilities and is ideally equipped to meet the demand.

The party toured the Cambridge location where construction of the buildings is going along unimpeded by the recent steel strike. Vanadium officials wisely decided on reinforced concrete construction methods as they foresaw the possibility of a steel strike months ago. This plant will house the aluminum refining and aluminum alloys production equipment which has been moved here from the former location at Chester, Pa. Since aluminum is used to produce vanadium, ferro-vanadium will also be made at Cambridge.

In Market Area—The Cambridge plant is located in the heart of the consuming market and near good power and raw material sources. Secondary aluminum production is expected to begin about Sept. 1.



One of the groups touring Vanadium Corp. of America's new ferroalloy plant at Graham, W. Va. Two of the five electric arc smelting furnaces can be seen in the background.

Vanadium's move for better facilities and increased tonnage is significant. Its long range planning reflects faith in future markets and new products.

CAA Tells of Airport Projects

Airport program federal aid projects in the current fiscal year total 169 and will involve $19,055,855 in federal, state, and local funds, Civil Aeronautics Administration has announced.

Federal money will comprise slightly more than half the sum named. No funds are listed for use in new airport construction, all allocations being designated for improvement facilities.

Schedules call for work on airports in these categories: 7 intercontinental express, 13 intercontinental, 15 continental, 24 express, 53 trunk, 43 feeder, and 14 secondary.

CASTING: How to Get Finished Part

Hitchiner Products has service to machine, finish castings on single order form . . . Relieves customer of fuss and cost . . . Offers engineering for casting design—By T. Metaxas.

An investment caster must sometimes sidestep machining problems because he cannot possibly outfit a machine shop capable of coping with the diversity of finishing chores certain to turn up. Sometimes the customer styles himself sole judge of what machining must be done on his casting. And machine shops accepting small, nuisance jobs in finishing castings find their work rich in rejects.

This is disjointed production that piles hidden costs on an investment casting. The casting is too often not designed to facilitate the secondary machining function.

"What Is It?"—To meet this problem of uncoordination, an official of Hitchiner Mfg. Co., Milford, N. H., wrote a letter to a customer: "We can make these investment castings for you at so much per unit. But we don't know what machining you have planned and we don't even know what the part is for. It might be better if you tell us."

This is an invitation to Manufacturer Jones to put his casting in the hands of Hitchiner Products Corp., a subsidiary formed to channel a rough casting right through to the finished stage—on a single order form. The service offers engineering advice to design a casting well-fitted for machining. It also farms out the casting to a job shop for machining, arranges for inspection and on-time delivery.

Meanwhile Jones is receiving a truckload of castings from a previous order. He fears the worst because it so often has happened. This lot must be machined in 2 weeks to meet his production schedules.

Hidden Costs—He frowns as he gets on the phone to call the reliable machine shop that has done work for him before. But an aircraft order crowds Jones' castings out of that shop. He tries another, working his way down to not-so-reliable shops. And as he does so his uneasiness grows.

Subcontracting this machining work has gnawed holes into Jones' working day. Extra purchasing forms mean more accounting. Inspectors must be sent down to the job shop to make sure specifications are heeded. These are a few of the hidden costs that will rear up and hit Jones later.

On this order Jones has submitted only the casting print to the caster. He is now following through on machining. But the caster has previously been working blind. He did not even know what he was making or what machining was to be done.

Hitchiner Products Corp. could have lifted much of the burden from Jones' shoulders. It has tentative agreements with five job shops to farm out castings work. These shops, selected on the basis of equipment and management excellence, form a machine shop entente with much versatility in dealing with the bulk of finishing jobs likely to arise.

"Sure, sure . . . But the sad part of it is he doesn't use his head."

Steps of System—Hitchiner offers first an engineering service to dovetail casting and machining prints so that each works for the benefit of the other. Finishing arrangements are then made with the appropriate job shop. Inspection systems will be set up in the job shops to establish quality control and minimize the menace of rejects.

A central testing department at Hitchiner will have movable testing equipment for transfer to job shops. With that goes the service of an inspector. At the same time, Hitchiner will be scheduling production for on-time delivery.

When it's all over Jones will have received his finished castings in a single operation. He has gotten the most out of his castings design and did not waste his time and money in arranging for machining—playing pot luck with job shops as he did so.

Drop Two Steps—Although Hitchiner Products is still in the flux of organization it has managed to function on several orders. It recently eliminated two machining steps by merely including an extra hole in the casting.

Hitchiner estimates that 80 pct of investment castings need some machining and finishing. The process makes precision castings by capturing in wax or plastic the form of a part. Around this wax goes an investment mold of cement-like, porous material. The wax is melted out of the investment and pouring results in a casting that can be both complex and precise.

The problem of finding good job shops willing to enter into such an arrangement is being met by Hitchiner by stressing the permanent nature of its business. Hitchiner intends fattening its job contracts by accepting work for other types of castings and for finely machined parts.

STRIKE: Defense Output Crippled

Impact of steel stoppage will be felt for months . . . Lovett claims 1 year setback to defense program . . . Shell shortage looms . . . Aircraft production halting—*By A. K. Rannells.*

The steel strike is officially over. But it still hurts. And it will hurt for months to come.

"No enemy nation could have inflicted more damage," said Defense Secretary Lovett, last week. He predicted that it will take at least a year to get the defense program back on its feet.

Mr. Lovett got White House permission to break security to tell the public the real facts. They were not pretty.

Out of Action — Ammunition rations in Korea may have to be cut. We are shooting 57mm recoilless rifles faster than we are making shells for them. Chevrolet's St. Louis shell plant closed for want of steel. The Thor plant at Bloomington, Ill., will also have to shut down.

Military production since June 2 has been coming mainly from steel inventories. World War II leftovers were used up early in the Korean fighting. Heavy fighting last summer cut deeply into ammunition stockpiles. An enemy push would wipe out what reserves we have left fast.

July output of 57mm ammo was down 33 pct. It will be 50 pct of normal in August. Shortage will show up in Korean foxholes in 30 days.

And there is more trouble ahead. Army Ordnance told THE IRON AGE that shell loading plants will run out of steel shells by mid-September. It takes about 5 weeks to get finished steel delivered to shell plants, fabricated, and delivered to loading plants. To this must be added 2 or 3 weeks for mills to return to full production plus time needed to get the finished shell to a gun crew fighting in the front lines.

No Parts—Strike has hit the Air Force too. North American reported last week that suppliers are out of steel for 422 essential parts for F-86 Sabre Jets. Several parts suppliers for the F-84 have shut down. Republic Aviation, which assembles the craft, is out of stainless sheet, rod and bar.

Production of J-47 jet engines will be cut next week. This engine is used in both the B-47 and the F-86. And regardless of engines, B-47 output will stop because of lack of parts.

Even with the strike over, production delays will lame the aircraft industry for 3 to 4 months. This means that 1952 plane production has been pushed back at least 20 pct. Real total is probably higher.

The Navy had been in a little better shape than the other services. It had cached a small steel reserve which it was doling out to contractors. But last week 29 out of 54 contractors had been sunk by the steel strike.

Production has stopped on rocket motors and heads, 20 mm projectiles, fuzes, torpedo parts, among others. And all the services are short on steel helmets and gas masks.

Down the Drain—Defense production normally chews up 850,000 to 1 million tons of steel per month. In June only about 105,000 tons were available. Plans to move defense steel from struck plants turned into a bad joke, sabotaged by the union's dog-in-the-manger attitude.

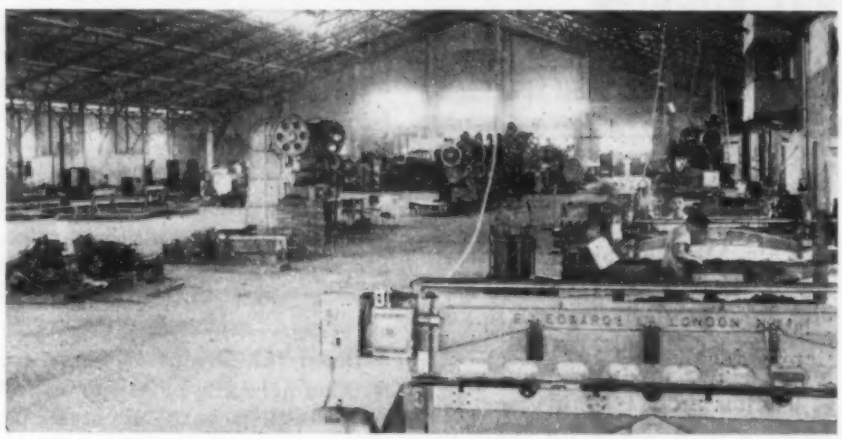
Even with the strike settled, this output has gone down the drain. It can't be made up. And more time will be lost. Much of the steel needed is special quality high-alloy, which takes time to make. Lead time on aircraft quality alloy steel, for example, has been 9 months. And this ignores damage to furnace linings and other steel mill equipment caused by the on-again-off-again buffoonery of the government's meddling in the steel wage negotiations.

Damage on the economic front will continue. Furloughed workers won't be called back until supply pipelines are unclogged. Industry will lose $3 to $5 billion—about 30 pct — in defense production. And steel for consumer goods will be little and late.

FABRICATING: Manila Plant Grows

Strict import controls help Philippine industrial development . . . Four new sheet metal fabricating plants now in operation . . . Ysmael Steel Mfg. Co. first in production.

A new industry has developed in the Philippines this year. There are now four sheet metal-forming plants operating in the Manila area. Impetus came from the strict control on imports which started in January, 1950. At that time, the Philippine Government cut imports from the U. S. sharply to conserve its dwindling dollar reserves.



FACILITIES: General view of the Ysmael shop. Power, air and water are fed to each machine from ducts sunk in floor. Concrete floor slabs allow easy machine relocating.

Starting on a pilot run basis in two small plants last year, final production lines were set up this May. The new mill, Ysmael Steel Mfg. Co., is located on the outskirts of Manila. Building was constructed from three war surplus airplane hangars left in the Islands by the U. S. Army.

Cost of the plant, including all machinery, was $600,000. There are 150 production line workers and six mechanical engineers. Plant is currently operating at 30 pct of capacity. Full production is expected by the end of the year.

As soon as the Ysmael plant began operations, three other smaller plants started up, convinced this was a profitable business. It looks like the industry is in the Philippines to stay.

Lower Prices—Ysmael claims it will be able to produce a 7-cu-ft refrigerator that will retail for 570 pesos in Manila ($285). A similar imported U. S. unit currently is selling for 1,000 pesos ($500). Arrangements have already been made with Ultra-Cold, Inc., of Los Angeles, Calif., to buy compressors and refrigerator hardware not made locally. The firm currently is also dickering with several U. S. makers of brand-name household appliances.

Filing cabinets are already being sold to the Philippine Government at a price of 136 pesos ($68). This compares favorably with the U. S. counterpart which sells for about 315 pesos ($157.50).

A double industrial fluorescent fixture, including bulbs (also made locally), sells for 27 pesos ($13.50). The similar U. S. product sells for 46 pesos ($23).

Ysmael press operators and assembly-line workers are paid the equivalent of 37½ cents an hour, slightly higher than union scale.

Equipment—Practically all machinery was purchased in Japan and Germany because of slow U. S. delivery. However, all welding equipment is U. S.-bought. Equipment includes: Six shears, 30 punch presses, two hydraulic presses; a complete machine shop to make all dies; a six-stage cleaning and bonderizing set-up; an enameling line; two water-wash spray booths capable of handling five painters apiece. Fork lift trucks are used to feed the presses and there are gravity-fed conveyers between all assembly-line units.

All steel sheets come from the United States. Next year, Ysmael plans to bring in 2000 tons of cold-rolled sheet, in gages from 16 to 24. Belgian and Japanese steel has been tested but does not have the uniform quality of U. S. steel.

The Future — Generally speaking, the future looks bright for this new Philippine industry. The government is doing all it can to develop and protect new local industries. This might mean an eventual ban on certain cold-rolled finished products from abroad or prohibitive tariff schedules, to say the least.

The only immediate problem that Ysmael faces is selling. On the average, the Filipino consumer prefers the U. S. import, the well-known brand name. The Filipino has to be convinced that locally-produced goods are as good as any brought in from abroad. Ysmael and the other companies feel that lower prices, and good quality will overcome this obstacle.

Canada to Make Clad Metals

Canadian manufacturers will soon be producing Ferrolum, a lead-clad steel, and Cupralum, a lead-clad copper, under license agreements with Knapp Mills, Inc. Negotiations to this end are already taking place and patents may also be made available in all free-world countries.

These clad metals, combining properties of both metals, are being used in various chemical process industries. (THE IRON AGE, Dec. 6, 1951, p. 114.)

Huge Furnace Moved to New Location

General American Transportation Corp. wanted a mammoth gas-fired annealing furnace similar to the one at its East Chicago, Ind., plant for its Sharon, Pa., division. Cost of a new furnace was prohibitive, so the company decided to ship its old unit to Sharon at 40 pct of the price of a new one.

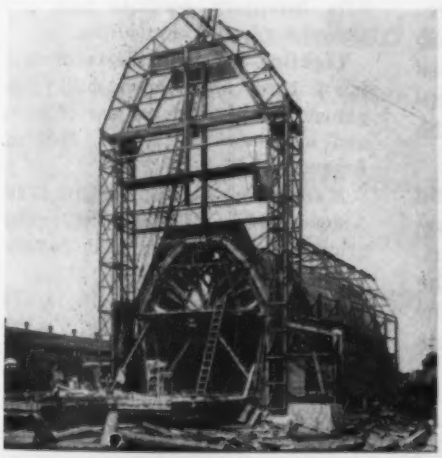
Moving a furnace large enough to accommodate two railroad tank cars is an engineering feat of major proportions. But the builders of the furnace, Jet Combustion, Inc., Chicago, worked out a plan to cut the furnace into pieces large enough for practical reassembly and small enough for handling.

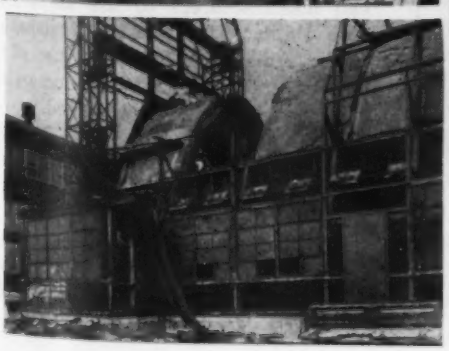
First problem was removal of the catenary arch. Padded cradles were built to shape and set under the arch. The arch, containing 24,000 insulating fire bricks, was cut crosswise at 5 expansion joints. Each of these was then cut into five 8 x 10 ft slabs and lowered on the preformed padded cradles. A padded top was put on and the whole assembly wrapped in waterproof paper to prevent moisture from getting into the brick.

Next the furnace walls, containing 34,000 fire bricks, were cut in sections with burner parts and flues intact. The movable car and 11-ton door were then dismantled, the siding removed and the steel frame taken apart.

Five months after the dismantling operation had started in East Chicago the furnace was lit and in operation in Sharon. Only replacements needed were 5 pct of the fire bricks and a new corrugated iron sheathing. This was cheaper to buy than to ship.

STRIPPED: Top: Door comes off. Middle: Arch was sawed along expansion joints. Bottom: Wall and arch parts were packed in weatherproof paper wrappings.





REVIVED: Transplanted from East Chicago, Ind., to Sharon, Pa., the gigantic, gas-fired annealing furnace was dismantled, shipped, and reassembled in 5 months.

RATIONING: NPA Faces Tough Job

Problem shifts from "where to get steel" to "how to give it out" . . . Military, AEC to get top priority . . . Basis will be 18 million ton loss . . . Follows six-point industry plan.

If it isn't one thing, it's another in the life of a control agency. National Production Authority's problem was changed overnight—from how to get steel to how to parcel it out.

As announced by Mr. Fowler on Monday, preferential treatment will be given to military, atomic energy, and direct defense programs. Defense-supporting industries will use present priorities and non-defense industries must stand in an orderly line for what is left while the mills get back to full production.

How It Works — Mills will be required to make specific set-asides for meeting defense needs. Inventory ceilings are lowered to 30 days.

Small users will get emergency rations when possible. Warehouses will be required to hold 12 categories of steel for 15 days to meet military orders.

No changes or cancellations are to be made currently in last half non-defense allocations. Present rules on carry-overs will apply.

A series of orders are being issued this week to put the programs into effect. Carry-over problems are expected to be solved by next March.

Program is based on a loss of about 20 million tons of steel. NPA is figuring on a 1952 total production of about 60-65 million tons.

Basically, program generally follows industry recommendations as submitted by a 5-man task force created for this purpose. These were turned over to the agency early last week.

Industry's recommendations embraced six main points:

1. Preferential treatment should be given military, atomic energy, and strictly defense orders—but no extra priority aid to be accorded defense-supporting programs. These would be limited to the regular priorities and the orders filled in order of importance.

2. Military orders calling for October delivery should be placed under priority directives (requiring repeal of Dir. 13) and Nov. 30 be set as the clean-up deadline for all such deliveries.

3. In order to avoid mill overloading, starting Oct. 1 each mill should be required to earmark specific tonnages of defense steel for delivery on military and atomic energy orders.

4. Inventory controls should be tightened—and enforced—to prevent hoarding. Curbs should be kept in effect until strike losses are absorbed and inventories progressively built up following the catch-up of defense orders.

5. No changes should be made in presently planned fourth quarter determinations and allocations. Instead, NPA would make the necessary adjustments to allow hold-over of uncashed CMP tickets until first quarter 1953.

6. Allotments of steel to non-defense programs originally intended for fourth quarter delivery should also be made valid up to and through February, 1953.

New Consumer Goods Order

All new consumer durable goods placed on the market after Sept. 24 must be priced under the government's new Ceiling Price Reg. 161. They may begin using CPR 161 at any time before the mandatory date. Comparison pricing forms the basis of the new order. Manufacturers will figure ceilings for new commodities by comparing them with similar items on which ceilings already are established.

An important change is authorization for establishment of ceilings for new goods by referring to ceilings for commodities issued after the pre-Korean base period.

Industry Controls This Week

Alloys — Amend., Sched. C, M-80 changes permitted nickel and chromium content of alloys.

Aluminum—Aluminum foil and powder was removed from the list of aluminum controlled materials by the following action: Amends., CMP Reg. 1; Revis., CMP Reg. 6; Dir. 3, NPA Reg. 2; M-5; M-84; M-88; Amend. 2, M-89.

Brass, Copper — Amends., M-82, M-86 grant distributors of brass mill and copper wire mill products an increase in inventory ceilings.

Durable Goods—All new consumer durable goods must be priced under CPR 161.

Inventories — Revis., NPA Reg. 1 lifts inventory controls from more than 50 varied commodities.

Lighting—Manufacturers of lighting fixtures and electric utility companies are given freer use of copper and aluminum by Revoc., M-97 and Amend., M-50.

Machinery—Amend. 10, CPR 67 and Amend. 34, CPR 30 affect ceiling prices of resellers and manufacturers of machinery.

Petroleum—Amend 1, SR 10, CPR 17 clarifies ceiling prices for middle distillates on the East Coast.

Rare Earths—Amend. 1, GOR 27 permits extension of rare earth contract pricing provisions in certain instances.

Rubber—Amend., M-2 removes restrictions on use of high tenacity rayon for rubber products and eases controls on synthetic and natural rubber.

Steel—Amend. 2, CMP Reg. 6, and Amend. 4, CMP Reg. 1 govern distribution of steel.

Tin—Amend., Dir. 4, M-25 requires can manufacturers to use all available tinplate for packing perishable foods. Amend., M-8 permits use of a limited amount of tin in products and processes previously permitted.

Iron Ore—Amend. 1, SR 41, Rev. 1, GCPR allows producers of brown iron ore in Missouri and Texas an increase in ceiling prices.

Scrap—Amend. 9, CPR 5 designates unprepared scrap as Grade 35 and provides for a dealer price differential of $2.50 per ton.

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USS

UNITED STATES STEEL

—Controls—

Quotas:

DPA issues steel export licenses for probable last period supply.

Although no one knows how much steel will then be available for all purposes, export licenses will continue to be issued against the problematical fourth quarter supply.

Defense Production Administration has established the fourth quarter export quota at 472,800 tons of carbon steel, 18,400 tons of alloy, and 1.4 million lb of stainless. This includes structurals, plate and rails, but not tinplate. The allotment represents a cutback of about 20 pct below third quarter export setasides.

Carbon Quotas—Office of International Trade has been instructed to earmark 171,600 tons of fourth quarter carbon for foreign oil operations and 94,735 tons for other special projects.

As for the remaining 206,464 tons, OIT has been told further that it is to be licensed only for ten specific essential purposes.

First priority is to be given to applications covering foreign military programs, mining, power, transportation, and communications. Only then is the agency to turn to five additional classifications — public works, industrial needs, needs of American industries overseas, warehouses, and agricultural uses.

Won't Export All—This does not mean that this amount of steel will leave the country, even though each license carries its own CMP ticket. Primary reason for authorizing the licensing is to enable exporters to keep their places on production schedules and to firm up order boards.

All of which builds up to a headache which will in the end probably require DPA help.

Because of this, OIT also continued to issue steel export licenses against a third quarter quota of roughly 590,000 tons. A substantial portion of these will be carried over into the fourth quarter and perhaps over into first quarter, 1953.

Resale of Idle Steel Permitted

National Production Authority took two steps last week in an effort to get any idle steel supplies into the hands of those who could use it.

By Amend. 2 to CMP Reg. 6, builders who are holding allotments of controlled materials but are unable to use them are authorized to resell them to any "recognized distributor."

Previously, the materials could be resold only to the original supplier or a person with an ACM order except on specific authority from NPA.

Amendment of Sec. 17 (d) of CMP Reg. 1 carries it still further and authorizes any consumer of steel controlled materials to dispose of them on unrated orders to any "established" distributor.

Many Inventory Restrictions Off

National Production Authority last week overhauled its basic inventory rules (NPA Reg. 1) and lifted inventory controls from more than 50 varied commodities.

Now free of inventory ceilings are gray iron castings, cast iron pressure pipe and fittings, cast iron soil pipe and fittings, tin, slab, zinc, nonferrous scrap, antimony, bismuth, boron, cadmium, calcium, mica, osmium, silicon, synthetic rubbers, and a wide variety of chemicals.

Former IRON AGE Editor Passes

Frederick L. Prentiss, former Cleveland Editor of THE IRON AGE, died July 11 at 86 years of age. Mr. Prentiss began his career in journalism as a cub reporter for the *Cleveland Plain Dealer* in 1890. He left the *Plain Dealer* to become associate editor of a daily in Norwalk, Ohio. Returned to the *Plain Dealer* in 1900, he later became assistant city editor and editor of the evening edition.

In 1907 Mr. Prentiss became associated with the *Cleveland Press* where he later was made assistant city editor.

From 1908 to 1938 he was Cleveland Editor for THE IRON AGE.

Controls

Okay Rare Earth Chemical Pricing

Lindsay Light and Chemical Co., West Chicago, Ill., has government authorization to apply for continuation of pre-price-control agreements on sales prices quoted to buyers of rare earth fluoride and rare earth oxide.

The firm is the sole U. S. producer of these materials.

Amendment 1, General Overriding Reg. 27, which became effective July 25, permits Lindsay to apply for extension of contract pricing provisions. GOR 27 is used only in limited situations involving sellers who, because of price ceilings, are unable to fulfill certain contract commitments involving prices.

Alloy Content Limits Changed

National Production Authority, by amendment of Sched. C to M-80, makes a number of changes in the permitted nickel and chromium content of alloys of different temperatures.

Basic changes result from putting percentages of nickel content under one heading. It increases allowable nickel content in lower temperature ranges for cast items but decreases it for certain wrought items.

Also, percentage limitations for seamless tubing have been increased from a previous 11 pct nickel content to 13 pct.

"Texas, eh!"

Navy Unwraps 1953 Ship Program

A sharp lift to private shipyards will be given by the 1953 Navy ship program which was unwrapped last week to reveal plans for:

A super-carrier of the *Forrestal* class, a second nuclear powered submarine, three destroyers, 35 others including escorts, minesweepers and auxiliaries, 350 landing craft and four conversions.

The New York Naval Shipyard at Brooklyn will get the super carrier which will be similar to the *Forrestal*, now being built at Norfolk. Cost will be $210 million.

Construction of the new atomic-powered submarine, to cost close to $33 million, will be carried out by the Electric Boat division of General Dynamics Corp.

Major conversion work will be carried out by Puget Sound Naval Shipyard and the Navy Yard at San Francisco. Only one private yard has the facilities for conversions of the *Essex* class and it is already loaded up with work.

All of the contracts for destroyers, escorts, minesweepers, landing craft and such will go to private yards, however.

Extensive as this program is for next year, it still represents a reduction in what Navy had asked—113 new ships. And in order to get funds for the new super-carrier, Navy had to postpone plans for several other ships, including one carrier and one destroyer.

Army Shifts More to Small Firms

When the Army works out its system for assigning contracts jointly with Small Defense Plants Administration, all three military services will have operating procedures whereby small business may perform a greater share of defense work.

Latest department to agree that SDPA should have primary responsibility for labeling all or part of a particular contract solely for small-business handling is the Navy. Approximately 3 months ago a similar agreement was reached by SDPA and the Air Force.

SDPA will have the right to determine whether a company is

Defense Contracts

"small business" for the purpose of handling procurement contracts. The agency also may certify that a small firm or group of firms is financially and technically able to fulfill certain contracts.

Navy Sends Notice — Office of Naval Material has notified all Navy procurement installations of methods by which military officers and SDPA representatives can carry out the joint determination program. This notification points out that:

Small business will be given an entire specific procurement only when there is "reasonable expectation" that enough small firms will bid to keep the final award figure "reasonable."

Awards under joint determination on a portion of a specific procurement will not be expected to be higher than the lowest price at which an award was made on the part not under joint determination.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Diesel engine parts, job, $29,877, General Motors Corp., Cleveland, *A. O. Chash.*

Mine, AT, heavy, practice, 50000 ea, $367,900, National Silver Co., Taunton, Mass.

Repair parts for cranes, 67 line itm, $28,243, Whiting Corp., Harvey, Ill.

Urns, coffee, 170 ea, $30,336, Pan Pacific Sales Corp., Gardena, Calif.

Repair parts, 8100 ea, 10 line itm, $30,679, Eastman Pacific Co., Los Angeles.

Repair parts for pumps, 31 line itm, $34,905, The American Well Wks., Aurora, Ill.

Urns, coffee, 230 ea, $38,640, S. Blickman, Inc., Weekawken, N. J.

Pump, centrifugal, 156 ea, $46,289, Carver Pump Co., Muscatine, Ia.

Repair parts for road machinery, 10 line itm, $48,820, J. D. Adams Mfg. Co., Indianapolis.

Repair parts for motor grader, 18 line itm, $55,983, Austin-Western Co., Aurora, Ill.

Repair parts for cranes, 370 line itm, $92,762, Wayne Mfg. Co., Pomona, Calif.

Compressor, air 105, 30 ea, $108,975, Le Roi Co., Milwaukee.

Paving machine spare parts, 47 ea, $169,486, The Foote Co., Inc., Nunda, N. Y.

Repair parts, 654 line itm, $211,770, Ingersoll-Rand Co., Los Angeles.

Repair parts for air compressors & diesel engines, 1886 line itm, $212,210, Chicago Pneumatic Tool Co., Los Angeles.

Shovel crane repair, 415 line itm, $268,781, Marion Power & Shovel Co., Marion, Ohio, *Dana G. Barber.*

Refrigerator, 200 ea, $115,400, Hussmann Refrigerator Co., St. Louis.

Refrigerator, 800 ea, $628,550, Hussmann Refrigerator Co., St. Louis.

Refrigerator, 200 ea, $219,750, Ed Friedric, Inc., San Antonio, Tex.

Refrigerators, 300 ea, $42,090, Copeland Refrigeration Corp., Sidney, Ohio.

Refrigerator, 311 ea, $177,270, Hussmann Refrigerator Co., St. Louis.

Refrigerator, 950 ea, $133,285, Copeland Refrigeration Corp., Sidney, Ohio.

Refrigerators, 149 ea, $292,316, Bally Case & Cooler Co., Bally, Pa.
Detector tube, clip assys, 194107 ea, $337,603, George W. Luft Co., Long Island City, N. Y.
Wheel and rings, 1282 ea, $34,473, The Budd Co., Detroit.
Tube forgings, 90MM, 2390 ea, $3,666,-260, Ridgewood Ordnance, Inc., Cincinnati.
Tube forgings, 120MM gun, 630, $3,533,-200, Ridgewood Ordnance, Inc., Cincinnati.
Cameras, 278 ea, $52,794, Ponder & Best, Inc., San Francisco.
Cameras, 648 ea, $26,753, Argus Cameras, Inc., San Francisco.
Cameras and accessories, 1188 ea, $35,-791, Argus Cameras, Inc., San Francisco.
Detonator, $36,438, Bathey Mfg. Co., Plymouth, Mich.
Computers, 245 ea, $4,598,079, Arma Corp., Brooklyn.
Cartridge tanks, 587500 ea, $2,228,194, Norris-Thermador Corp., Vernon, Calif.
Synchros, 22973 ea, $1,735,194, Ketay Mfg. Corp., New York.
Logbooks and secant attenuators for gun fire control system, 4700 ea, $58,934, General Electric Co., Washington.
Indicators, 2085 ea, $289,117, Watson Elevator Co., Englewood, N. J.
Explosive ordnance disposal tools, $272,-463, H. A. Sward Co., Inc., Inwood, L.I., N. Y.
Fuze containers, 122675 ea, $26,988, Melvina Can Co., Mespeth., L. I., N. Y.
Belt links for 20mm ammunition, 11320-000 ea, $2,019,613, Aluminum Specialty Co., Manitowoc, Wis.
Fuze containers, 367500 ea, $113,219, Robertson Can Co., Springfield, O.
Indicators, 2085 ea, $279,994, Austin Co., N. Y.
Synchros, 40000 ea, $2,446,500, Bendix Aviation Corp., Teterboro, N. J.
Igniter supports, 251804 ea, $25,180, Livingston's Machine & Tool Co., Frostburg, Md.
Tail covers for mine cases, 4900 ea, $48,-461, Bathey Mfg. Co., Plymouth, Mich.
Cartridge cases, 1291000 ea, $4,234,000, Clayton & Lambert Mfg. Co., Louisville, Ky.
Pallet adapters, 2000 ea, $170,000, Conver Steel & Wire Co., Inc., New York.
Aircraft revolver gun, 50 ea, $757,810, Oerlikon Machine Tool Works, Buehrle & Co, Zurich, Switzerland.
Rocket adapters, 864 ea, $49,118, Huron Metal Products Co., Brooklyn.
Synchros, 57000 ea, $4,943,266, Bendix Aviation Corp., Teterboro, N. J.
Fuze containers, 1650160 ea, $295,708, Bay State Steel Co., Wilmington, Mass.
Electrical connectors, 2208000 ea, $595,-719, General Electric Co., Providence.

Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

Navy Purchasing Office, Washington.

Anchors, 1168 ea, 6097-S, Aug 19.
Coupling, cutter, stop wedge, 4200 ea, 611-S, Aug 19.
Box, tool, steel, 535 ea, 6618-B, Aug. 5.
Dies, carbon, steel, hex, 15588 ea, 6626-B, Aug 18.
Pliers, 80916 ea, 6630-B, Aug. 15.
Machines, electric, floor polishing, 142 ea, 6634-B, Aug 7.
Gages, telescoping, thickness, 6555 ea, 10-Q, Aug. 6.
Calipers, micrometer, tubing, 601 ea, 11-Q, Aug 6.

Armed Services Medical Procurement Agency, Brooklyn.

Table utility mobile, 337 ea, 53-8B, Aug 5.
Table top bedside table, 2400 ea, 53-9B, Aug 5.

Signal Corps Supply Agency, Phila.

Thickness gage flat type, 5300 ea, 49-12, Aug 12.

Watervliet Arsenal, Watervliet, N. Y.

Steel, bracket, for 40MM gun, 800 ea, 53-1B, Aug 18.
Steel, alloy shaft parts for 40MM gun, 1000 ea, 53-1B, Aug 18.

—Financial—

Disaster Loans Granted by RFC

Reconstruction Finance Corp. has instructed its field office at San Francisco to make disaster loans to the Kern county earthquake area and to set up temporary offices to process them.

Meanwhile, RFC has listed an addtional 52 loans approved by the agency which total $97 million, including the $94 million loan for San Manuel Copper Corp.

Also included were 32 business loans under the Defense Production Act, most in amounts of $100,000 or less. The agency refused 26 applications totaling $5.2 million.

Twenty additional disaster loans totaling $85,000 were granted to help businessmen and residents recover from Missouri flood damage.

Refinery Write-off Recommended

Petroleum Administration for Defense has recommended that a tax amortization certificate be approved for the Proven Oil Refining Co., Dallas. It will cover 65 pct of the probable $18 million cost of a new gasoline refinery at Florence, Ariz.

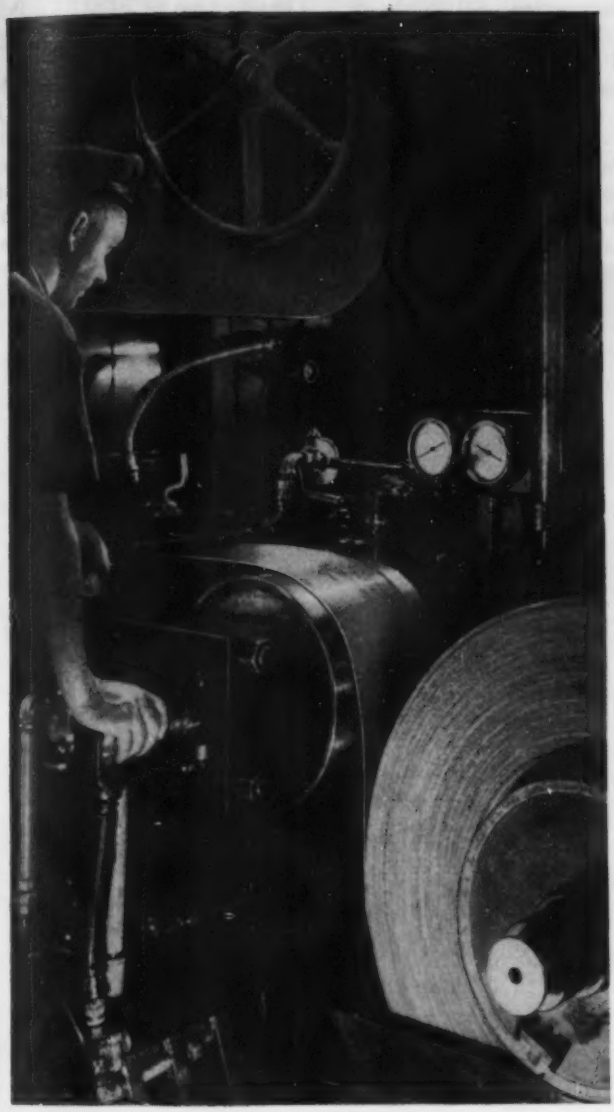
The refinery will be the first built in the state. Plans call for an initial 50,000 bbl per day output of aviation gasoline.

Crude for refining will be drawn from the proposed 953-mile pipeline running from Texas to California. The line has been approved for construction and received a fourth quarter steel allotment of 59,000 tons of 24-in pipe.

Tax amortization application for the pipeline is still pending.

"If you keep watching the pennies, Ridgeway, you'll always be a butler."

SPRING STEEL



Roebling Cold Rolled Spring Steel brings fewer machine stoppages . . . fewer rejects

YOU SAVE MONEY with Roebling Cold Rolled Spring Steel because it's of absolutely uniform quality. Every inch is just like every other inch, dimensionally and in physical properties. Service records show that it cuts down preparation time . . . gives you a better product and better production. And Roebling Cold Rolled is made annealed, hard rolled untempered; scaleless tempered; tempered and polished; tempered, polished and strawed; and tempered, polished and blued.

Large quantities of Roebling's specialty wires – flat, round and shaped – are required today in the national rearmament program. Roebling, however, is one of America's largest manufacturers of specialty wires, and we shall always do everything possible to meet your requirements. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

Atlanta, 934 Avon Avenue ★ ***Boston***, 51 Sleeper Street & 5 Pittsburgh Street ★ ***Chicago***, 5525 W. Roosevelt Road ★ ***Cincinnati***, 3253 Fredonia Avenue ★ ***Cleveland***, 701 St. Clair Avenue, N. E. ★ ***Denver***, 4801 Jackson Street ★ ***Detroit***, 915 Fisher Building ★ ***Houston***, 6216 Navigation Boulevard ★ ***Los Angeles***, 5340 E. Harbor Street & 120 S. Hewitt Street ★ ***New York***, 19 Rector Street ★ ***Odessa, Texas***, 1920 E. 2nd Street ★ ***Philadelphia***, 230 Vine Street ★ ***Pittsburgh***, 1301 Clark Building ★ ***Rochester***, 1 Flint Street ★ ***San Francisco***, 1740 17th Street ★ ***Seattle***, 900 1st Avenue S. ★ ***St. Louis***, 3001 Delmar Boulevard ★ ***Tulsa***, 321 N. Cheyenne Street ★ Export Sales Office, Trenton 2, N. J.

Industrial Briefs

Order—Beech Aircraft Corp., Wichita, Kan., has given WILLYS-OVERLAND MOTORS, INC., an order for landing gears valued at more than $3 million.

Facilities Increased — LESLIE CO., Lyndhurst, N. J., has added a new wing providing increased engineering space to its plant.

Being Established—To speed development work on jet engine controls, a new jet engine laboratory is being established by Aeronautical Div., MINNEAPOLIS-HONEYWELL REGULATOR CO., Minneapolis.

New Company—John W. Stiles has formed a new company, STILES CONVEYORS & TRANSMISSIONS, in Miami, Fla.

Receives Order—An order has been received from Office of the Chief of Transportation, Army Transportation Corps, by GREENVILLE STEEL CAR CO., Greenville, Pa., for 32 50-ton A.A.R. type flat cars.

Announcement—A wholly owned subsidiary known as Lea Mfg. Co. of Michigan, Inc., has been formed by LEA MFG. CO., Waterbury, Conn.

Golden Anniversary—IRVING SUBWAY GRATING CO., INC., is celebrating its Golden Anniversary this year.

Appointment—Jay C. Angel & Co. of Chicago, has been appointed by GRIES REPRODUCER CORP. to represent them in the Chicago Metropolitan Area.

Underway—Negotiations are underway for the acquisition of LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Ia., by the ALLIS-CHALMERS MFG. CO.

Sales Meeting—NEWCOMER PRODUCTS, INC., held a 4-day sales meeting of the sales representatives in the general sales offices in Pittsburgh and at the Newcomer Plant at Latrobe, June 26 through June 29.

New Contract — PACIFIC CAR & FOUNDRY CO., has a new contract to build 500 insulated railroad cars for the Bangor & Aroostook Railroad.

Proposed Construction—SHENANGO AGALOY TUBE CO. has announced the proposed construction of a new plant at Wheatland, Pa.

Appointment — Acme Saw & Supply, San Diego, Calif., has been appointed distributor for San Diego and Imperial counties, southern California, by CARBOLOY DEPT., of General Electric Co.

Washington Office — A Washington office has been established by BJORKSTEN RESEARCH LABORATORIES.

New Plant—Construction was started last month on a large plant by the EATON MFG. CO., on the outskirts of Marion, Ohio. It is being designed and built by the Wigton-Abbott Corp., Plainfield, N. J.

New Service—EUTECTIC WELDING ALLOYS CORP., Flushing, N. Y., has inaugurated a new Railroad Welding Advisory Service, to give American railroads the benefit of specialized experience in the new uses of Eutectic Low Temperature Welding Alloys in their industry. Hugh H. Hurley will head the new service.

Branch Offices—In order to enlarge its sales activities in Ohio, LUKENS STEEL CO., Coatesville, Pa., will establish two branch offices, one in Cincinnati and one in Columbus.

"Gee, Mr. Gwumble, your rapid calculation of discounts is almost machine-like!"

Construction — STEINER-IVES CO., has begun construction of a new plant at Union, N. J.

Established—UTICA DROP FORGE & TOOL CORP., has established two scholarships for under-graduate students at Stevens Institute of Technology. Laurence A. Minck of Yonkers, N. Y., and Robert A. Lohmann of Orange Grove, N. J., are the students designated by the Stevens Faculty Committee on Student Aid.

Engineering Films—Bureau of Audio-Visual Instruction, STATE UNIVERSITY OF IOWA, has released a revised edition of two of its most important sound films: *Motion Study Principles* and *Motion Study Applications*.

Motion Picture — LATROBE STEEL CO., Latrobe, Pa., has a 16mm sound motion picture in full color, *The Story of High Speed & Die Steels*, which is available for showing before qualified business and technical groups.

Now Available — Custom rolling of most ferrous and nonferrous ultra-thin, high-precision metal strip in any quantity is now available to industry from Industrial Products Div., AMERICAN SILVER CO., Flushing, N. Y.

Congratulations — THE ALDRICH PUMP CO., Allentown, Pa., is commemorating its 50th Anniversary.

Enrollment—INSTITUTE OF SCRAP IRON & STEEL INC., has opened enrollment for its seminar for junior executives of the scrap industry to be conducted at Carnegie Institute of Technology, Pittsburgh, Aug. 24-29.

Appointed Distributor — KURT ORBAN CO., INC., has been appointed exclusive American distributor for Europe's largest builder of heavy machine tools, Schiess A. G., Duesseldorf, Germany. Schiess is setting up technical offices in this country to supplement Kurt Orban's Service Center in Cleveland.

Activities—All export activities of the Automotive Replacement Products Div., Bohn Aluminum & Brass Corp., Detroit, are to be handled by BORG-WARNER INTERNATIONAL CORP.

Steel Lack Delays New Car Models

Planned to boost sales, new model programs for 1954 have been cut badly by strike-caused shortage . . . Steel will limit number of new cars that can be made—By *R. D. Raddant.*

No. 1 question in the automotive industry today: What will the steel strike do to planning for new models?

The question is going to remain, but there are a few old rules of thumb that might be reviewed.

New models are most often brought in for the very good reason that they are the only means left to inject the flush of life into a deteriorating sales situation. When things are bad, it is possible to brighten them by introducing something new.

Corollary is that the producer who brings in a new model or line of models must be in a position to capitalize immediately on the awakened interest. He has to sell as many as he can while they are still new.

This tested adage poses a problem at present. Indications for latter '52 and the forepart of '53 certainly do not presage any large amounts of steel. Rather, steel will be a limiting factor on the number of new cars that can be manufactured. The manufacturer introducing a new model line may not be able to make enough cars to capitalize on his sales advantage.

Price Troubles—Similarly, prices are already high, would be forced up by an increased basic price in steel, and by the use of conversion steel where mill supplies ran short. Cost of tooling up for a new model line would pile an additional burden of price on this already topheavy structure. Which might become awesome enough to drive off potential customers.

It is already clear that new model programs for '54 have been lopped heavily. Some sources say that new design is "at a standstill," and there have been a number of layoffs in engineering firms doing this work in Detroit.

On the other hand, it would be difficult for any single manufacturer to steal a march on his competitor. Major dies for a model change have been ready for months. And producers of the smaller dies that go onto the production lines at the 11th hour have been receiving considerable pressure for delivery in September.

How Long?—Estimates of 3 to 5 weeks have been made as to the amount of time required for the automotive industry to come back into full production following the steel strike's close.

FULL SPEED: Famed auto engineer Charles Kettering breaks ground for new unit of General Motors' Technical Center near Detroit.

These are probably not overly generous. Here are the factors involved:

New steel capacity: Hard hit by the strike. The greater portion of this work stopped with the declaration of the strike. New openhearths, new blast furnaces, expansions in rolling capacity were halted at the mills.

Old steel capacity: Not helped by the enforced idleness. One major midwestern mill lost a blast furnace on its third shutdown when the mills closed finally on June 2. Condition of other weak furnaces won't be known until they are reheated. Another major mill reported over 25 pct of its openhearth capacity in a bad way due to roof failures. There has been no maintenance work done on these crippled facilities.

Conversion — Competition for conversion capacity: Becoming stronger. A number of industries that had previously held off are now looking with increasing interest for open conversion time. As consumer pressure grows, this trend will become increasingly strong.

Previously tight steel types are staying that way. Cold finished bars could give trouble. They've always been tight, are in demand by the military, and most cold finishers are faced with a bottleneck in their annealing and heat treating capacity. A major share of them were still whittling backlogs when they entered the steel strike period.

Shortages in component items: Where inventories were actually exhausted by producing companies, it will be possible to produce only bits and pieces until scarce items can be brought into the production lines. Many firms dipped into inventories to avoid layoffs.

LABOR: Unemployment Rolls Swell

Steel strike forces 183,000 out of work in a month . . . Even sales forces have been cut . . . Production continues to slip . . . Ford reopens 15 assembly plant for 5 days.

Unemployment directly traceable to the steel strike was again climbing in automotive centers last week. A total of employed factory workers in the Detroit area indicated that from June 15 to July 15 employment dropped from 493,000 to 310,000. This did not include office forces and sales personnel.

Even selling forces for the large steel mills are beginning to feel the pinch. Some sales offices are losing people and have been told that they are not to be replaced until the strike is settled.

Automotive production was still on the downskid last week, though strenuous efforts were being made to halt the trend. Ford Motor Co. scheduled 5 days of production for this week in its 15 Ford division assembly plants. The move would bring 22,000 automotive workers back to the assembly lines for the 5-day period.

For 5,200 Lincoln-Mercury Div. employees there was no help. Plants in St. Louis, Los Angeles, and New Jersey would remain closed. Truck and tractor lines at Highland Park, Mich., were scheduled for a 5-day opening at the same time.

Casualties—General Motors' national employment total was still falling, dropping about 13,000. At the beginning of last week, GM layoffs had included 16,879 in the Detroit area, and 121,518 across the nation.

Chrysler Corp. has been closed down almost completely—meaning layoffs of almost 60,000 workers in the Detroit area.

Layoffs caused by the steel strike shattered what had been a good employment year among the auto industries. General Motors, recapitulating its employment record for the 18 months preceding the steel strike, pointed out that only in August of 1951 had there been a variation of more than 3.5 pct in the company's total employment. For the 12 months prior to June 30 of this year, the employee figure varied no more than a few percentage points.

Steady Employment—The average figure of 39 working hr per week never fell more than 5 pct during the period, despite retooling for government contracts and the many uncertainties that have plagued firms doing defense work since the defense slowdown began. Initial employment figure for this period was 309,000. Situation in the second quarter of this year looked brighter, in fact, if the General Motors figures are representative of the industry. With steel supplies bettering, GM defense dollar deliveries in the second quarter were 8 pct over those for the first quarter.

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS	TOTAL
July 26, 1952	34,045*	7,385*	41,430*
July 19, 1952	27,297	4,758	32,055
July 28, 1951	99,844	31,754	131,598
July 21, 1951	102,115	29,304	131,419

*Estimated

Source: *Ward's Reports*

THE BULL OF THE WOODS — By J. R. Williams

Famous Blades

Excalibur...

Blade of King Arthur... symbol of leadership

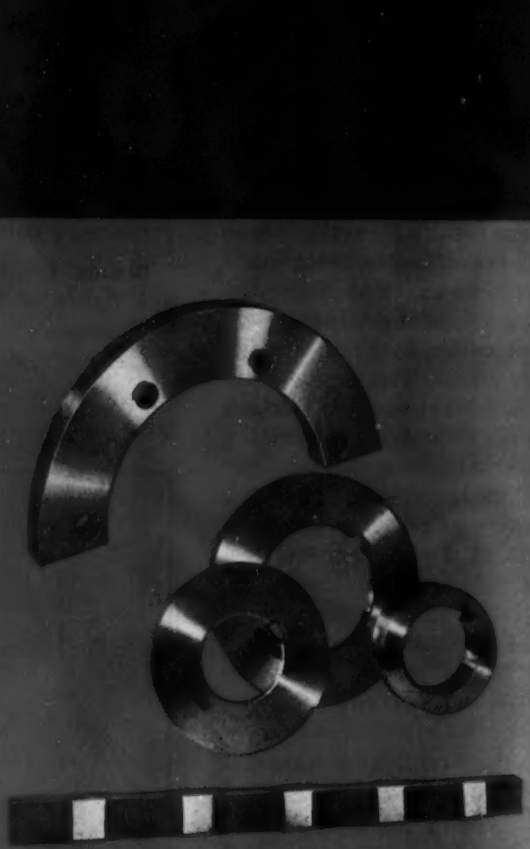
Created by the magician Merlin, Excalibur, the sword of King Arthur possessed great powers. Above all, it symbolized the authority and leadership of the King. Only Arthur, the true leader, had the power to remove Excalibur from the anvil in which it was embedded and wear it as ruler of all England.

Heppenstall SHEAR KNIVES ... symbols of leadership in outstanding service to industry

Users of Heppenstall Knives obtain exceptional service as represented by the following advantages:

- ★ MORE CUTS BETWEEN GRINDS
- ★ MORE UNITS PER BLADE
- ★ LOWER OVERALL BLADE COST
- ★ INCREASES IN PRODUCTION

Your shearing and trimming operations can also benefit through Heppenstall Shear Knives. Make them your standard specifications today.



Heppenstall

the most dependable name in forgings

PITTSBURGH 1, PENNSYLVANIA

Sales offices in principal cities

Tax Losses Worry Administration

Steel strike will have broad impact on federal revenue . . . Drops in excess profits, corporate, personal income taxes expected . . . Plan for next year—By G. H. Baker.

Most of Washington officialdom is just now recognizing the broad impact that the steel strike will have on the government beyond a disruption to the defense program. At first it meant little more than that steel shortages, which had just about disappeared, would temporarily return. This would further postpone decontrol and a buyer's market. They won't admit it, of course, but more and more they are beginning to realize what it means in a financial way—that is, tax collections.

An awareness of the chain action effect is being brought home with each report of a plant shutdown outside the steel industry. They are beginning to see that it means not only a loss of corporate income taxes but a sizable reduction in excess profits take, not to mention decreased income taxes from the workers themselves. All in all, it must eventually amount to a tidy sum, even to a government which spends $1 million with less concern than the man in the street spends one buck. And it troubles them.

Still With Us — Tax problems are not forgotten by Congress, even though many members of that body have been busy at conventions and expect to spend much of the rest of the year electing either themselves or somebody else.

During the current adjournment, a joint committee will be busily gathering facts and figures for the next session. Industrial, business, trade, professional, labor and agricultural groups may expect to get questionnaires asking what they think should be done to improve the present tax setup. What the committee wants are specific recommendations for changes, not opinions of present laws. The latter might be too hot for congressmen to read.

Capital surces say that this does not forecast any special tax-cutting legislation, regardless of the outcome of the election. Nor, by the same token, does it necessarily mean any further increase. But the fact is that if no action should be taken at all, the excess profits tax would expire, not to mention an automatic scaling down of corporation and individual income taxes. This is unthinkable so far as the Treasury is concerned.

After The Boom — Attention is being turned behind the scenes to finding ways and means to prop up the vastly expanded economy when the defense production boom letdown starts. Probable date for the beginning of the recession is questionable. Until the steel strike, the most likely date being thought of was last half 1953.

Tip-off was in the latest report on defense mobilization. Said Acting Office of Defense Mobilization Director Steelman: "Our goal is not a military effort alone but rather a many-sided production build-up . . . and as our military needs are met, our expanded productive capacity can be used for raising further our own living standards and contributing to an attack on poverty throughout the world."

"Frankly, I was sold three hours ago, but you give such a wonderful pitch . . ."

Several agencies are more or less looking into the matter. These include Defense Production Administration and its offshoot, National Production Authority. But Commerce Secretary Sawyer is presently carrying the ball for the Administration. No plans will be okayed by the high powers until Mr. Sawyer reports on a study which his economists are making with the help of the Committee for Economic Development.

It is similar to a previous survey made about 1943, the results of which were released under the title of *Markets After the War*. Present study will center on potential markets for goods and services which will either be available or which should lend themselves to building up after defense production begins to sag. It is significant, perhaps, that the economists have been instructed to base their studies on probable conditions which may exist after next July. They have been told to have a report ready by January.

No Retreat — The government does not intend to make any retreat from its stand on reciprocal trade and encouragement for increased imports. Administration stalwarts have been increasingly alarmed in recent months by the rash of petitions and requests to the Tariff Commission seeking the "escape clause" for specific products.

Underlying idea, of course, is to get previous higher tariff duties partially or wholly restored on the grounds that domestic industry is being harmed by the influx of foreign goods.

The White House has made it abundantly clear that any increase would be the exception, not the rule.

DPA: New Goals for Expansion

Need increase in steel-supporting industries . . . Primary requirements are iron ore and taconite, manganese, columbite, tantalite ore boats . . . Plan 122 million tons capacity.

Now that steel mills are reopening, Defense Production Administration is again emphasizing the need of sufficiently expanding closely related industries so as to support an overall steel capacity of 122,000,000 tons.

Attention is concentrated on five specific supporting industries —production of iron ore and beneficiation of taconite, manganese, columbite, tantalite, and ore carriers.

In addition, DPA calls for expansion within the steel industry of three specific types of production—tinplate, galvanized sheet, and strip.

122 Million Tons—The government figures that the economy will need from 118 to 120 million tons of ingot steel annually for some time to come. It sees a capacity of 122 million tons as necessary to assure such output.

Most of this ingot capacity requirement is already under construction or planned. No trouble is seen on this score, what with tax certificates, loans and other incentives available if needed.

But in order to support such output and capacity, it is further calculated that by 1955 production capacity for iron ore, not counting any recovery from beneficiation processes, will have to reach 147 million tons.

This does not take into consideration any ore imports as such or recovery from beneficiation processes. The increase is to come either from domestic mines or foreign mines operated by United States corporations.

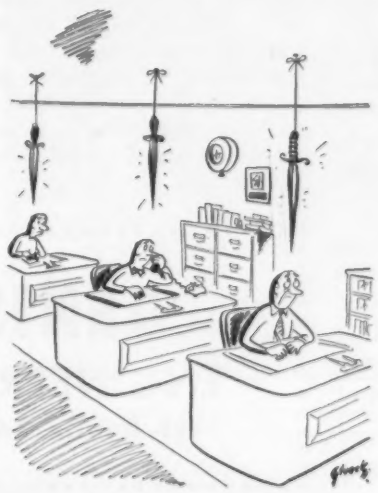
Expansion Goals—With respect to taconite, a program is already under way to eventually provide a minimum of 15 million tons of beneficiated ore. Briefly, the expansion goals are:

1. Iron Ore—Expansion to an available supply of 147 million tons by 1955. This means an increase by 57 million tons above the 1950 capacity. Much of this is already under way and includes expected development of ore sources in Labrador and Latin America.

2. Manganese—Target for manganese supplies is set at 2.5 million long tons by 1954, metallurgical grade. This means a hike of 630,000 tons above the domestic capacity of 1,870,000 tons in 1950, including expansion projects which are already under way.

3. Columbite and Tantalite—Combined goal for these ores has been set at 3,000,000 lb of 62 pct concentrates not later than 1954.

4. Lake and Ocean Carriers—It is estimated that 4,000,000 tons of additional ore will need to be transported on the Great Lakes by 1954, requiring the conversion, or new construction, of six carriers of 20,000 gross tons each. It is also estimated that new sea-going ship capacity will be needed to handle an additional 22,000,000 tons of iron ore plus 1,250,000 tons of bauxite from offshore sources.



Target is an additional 38 bulk ore carriers of 25,000 tons by Jan. 1, 1957.

5. Electrolytic Tinplate — Goal for electrolytic tinplate capacity has been placed at 4,100,000 net tons of capacity by 1955. This means an increase of 1,300,000 tons, some of it under way, above the capacity at the start of 1950.

6. Galvanized Sheet and Strip—Target is 1,300,000 net tons capacity by Jan. 1, 1954, an increase of 700,000 tons over the capacity as of Jan. 1, 1950.

DPA Gave No Plane Type Advice

Defense Production Administration last week was sticking to its statement that W. L. Campbell, acting chairman of the Aircraft Production Board, made no firm recommendations to Navy and Air Force officers that they eliminate some combat plane types to concentrate on building others.

A DPA spokesman described the document produced by the board at a recent meeting as a "staff paper" containing a series of questions raised by Mr. Campbell for study by military leaders. The board's job, he said, is to expedite production, while selection of types of aircraft for use by Navy and Air Force is a military job.

Questions raised in the "staff paper" included a query as to the advisability of removing obsolescent types of planes from production schedules speedily, so as to make way for building newer types.

Unofficially, it was learned military members of the board were "bowled over by the implications" in the series of questions on production. The Air Force did not make an official comment on its attitude toward the questions submitted.

Aircraft Steel Shipments Curbed

Warehouses and other distributors have been instructed not to ship any aircraft quality steel to any customer who has already received 5000 lb from all sources during the calendar month.

MULTIPRESS®

solves another "tough one"

Feeds and Forms hard-to-handle plastic with automatic accuracy

U. S. Gasket Co. gets quality plus speed in compacting parts from Du Pont's Teflon

Toughness and high heat-resistance make Du Pont's Teflon an ideal plastic for many needs. But feeding the raw material to molding dies has been a problem; the granules tend to cling together in a non-fluid mass.

MULTIPRESS solved the feeding problem with its unique, shuttle-type, self-agitating feed attachment. In addition, the smooth, oil-hydraulic operation and fully adjustable ram action of Multipress brought other production gains. At cost-cutting production speeds, compacting is done with *automatically uniform results*—a necessity because most Teflon parts made at U. S. Gasket must pass micrometer tests for close-tolerance requirements.

Quick tool-changing and easy adjustment of ram stroke, speed and pressure are further advantages. With more than a thousand different dies, U. S. Gasket switches four Multipresses from one group of short-run jobs to another with minimum loss of production time.

Another feature this manufacturer likes is that Multipress provides a bottom ram to apply pressures upward giving equal pressures on top *and* bottom of parts. The four automatic Multipresses now in use at U. S. Gasket—a 25-ton, a 15-ton and two 8-ton units—are all equipped for this "double-end" ram action.

Multipress is getting better results for hundreds of manufacturers, in many different fields, because it provides smooth, rapid, low-impact pressures under accurate control—easily adjustable to the exact need. Eight frame sizes available . . . one-ton to 50-ton capacities . . . auxiliary equipment for many special needs. Write for full details.

THE **DENISON** ENGINEERING COMPANY

DENISON Hydr-Oil-ics

1158 Dublin Rd. Columbus 16, Ohio

Canning Saved by End of Strike

Some perishables will be lost . . . California to be hardest hit . . . NPA rushing tinplate . . . Mills trying for fast recovery, but slowed down by poor maintenance—By *T. M. Rohan.*

Last week's strike settlement came in the nick of time to ward off a mortal blow to the $850 million western canning industry.

National Production Authority moved in on tinplate stocks and hoped to spread out the available supplies where they can do the most good. California, with one cannery at Modesto already down, was expected to be hardest hit, although just how hard was problematic. Peaches and apricots are at their peak and highly perishable so may take a beating before tinplate is again available.

In the Northwest about 80 to 90 pct of the crop can be saved, although there may be a partial shutdown later on because of a gap in deliveries.

Rush Tinplate—The lone western tinplate producer in full scale operation, U. S. Steel at Pittsburg, Calif., was working around the clock to meet the crisis. Inspection and reconditioning after the long strike will probably delay full production for about a week. The small amount of tinplate on hand was frozen by NPA for allocation. Pacific Can Co., which confidently announced 2 weeks ago it had enough on hand and in transit from Weirton for the end of the year, may have some requisitioned but will undoubtedly stay in full production.

Automobile assembly plants, more or less at the mercy of their home plants and component suppliers, were exerting every effort to get back in production in a minimum of 2 weeks.

Delays—Out-of-shape steel producers all worked feverishly to get back in production. Lack of maintenance during the strike was expected to appreciably delay resumption of production. At U. S. Steel's Geneva, Utah, plant, for instance, a blast furnace breakthrough about a week before the strike was still unrepaired.

Clerical help, too, was way behind. Most production would have to be re-scheduled. Steel company sales offices were told not to even attempt to contact the mill for delivery dates for at least 2 weeks.

Few Orders—Sales offices, oddly enough, received no flurry of calls for delivery dates after strike settlement, most customers apparently being more interested in political convention proceedings.

In Seattle, Bethlehem, the largest producer, expected to resume production very soon. Northwest Steel Rolling Mills, which has dealt independently with the union, will resume work under a "me too" contract with provisions identical to the Big Steel settlement. Isaacson with an AFL contract has been working uninterrupted as well as Oregon Steel Mills at Portland with a similar affiliation.

DPA Certificate — Seidelhuber Steel Co. at Seattle, which is now installing a recently purchased 10-in. mill, last week got a $1,403,712 Defense Production Administration certificate of necessity with 55 pct accelerated tax write-off.

Seidelhuber has poured no steel ingots since completion of a British contract. A 24-in. mill previously purchased has been temporarily sidetracked in favor of speedy erection of the 10-in. mill.

Production is already sold out on this to the year's end and operations are expected to commence in September.

$4 Million "Reefers" — Pacific Car & Foundry of Seattle, which last year turned out the entire U. S. commercial output of refrigerated railroad cars, last week got another order for 500 more "reefers" as they are called in the trade. The new $4,300,000 contract with the Bangor and Aroostoock Railroad in Maine brings PC&F's backlog to 1405 cars.

FIRE: Last week's California earthquake set off this fire at Gulf Oil Co.'s Paloma refinery. Six cracking towers and six storage tanks burned.

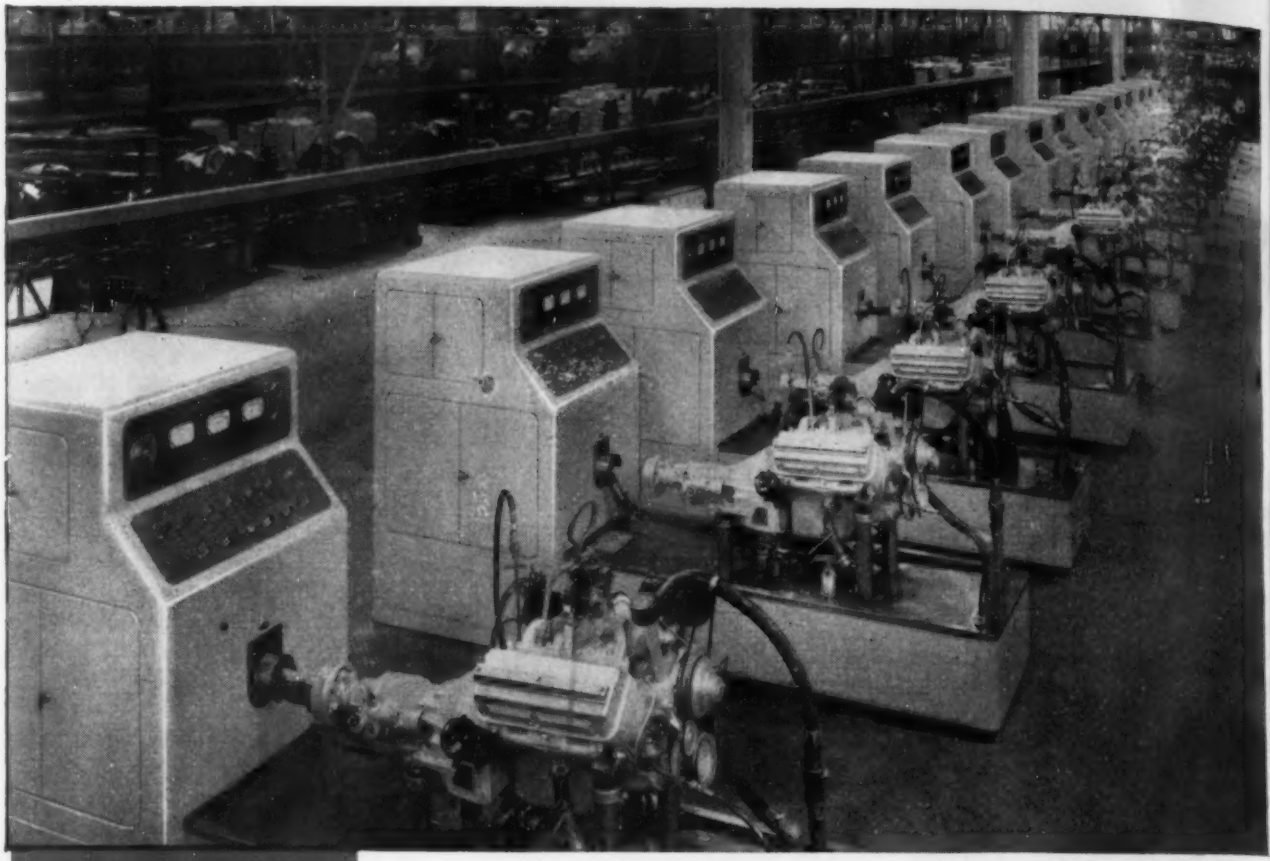
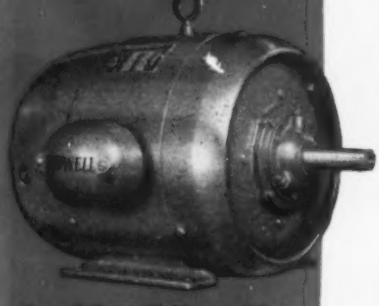


Photo courtesy George L. Nankervis Co., Detroit, Mich.

Howell 40-H.P. Type K Motor installed in a Nankervis Hot Engine Test Stand.



Howell Type K Motor. Offers constant performance in the presence of dirt, dust, fumes and moisture. Sizes from 1½ to 200 H.P. Either vertical or horizontal mounting.

New test stand proves performance before engine meets chassis!

In these Nankervis Hot Engine Test Stands, installed in one of the country's newest automotive engine plants, 40-H.P. Howell Motors act as the test load for new engines. It's an unusual application for electric motors, but Howell Motors handle the job easily.

Here, inefficient engine operation from poor carburetion, timing, ignition, etc., is detected immediately when horsepower does not reach prescribed standards. Faulty parts can be quickly replaced or adjustments made while the engine is still on the stand.

Testing procedures like this one make special demands on the electric motors. Highest accuracy is a must. Howell Motors' superior design, quality materials and precision construction assure the performance necessary for exacting operations.

You, too, can benefit by using Howell engineering services and precision-built Howell Motors from 1/6 to 250 H.P. in standard NEMA frame sizes. Howell Motors do your tough jobs better, and at the same time give you economy through long life and trouble-free operation. It will pay you to contact the Howell representative in your city or write to us today.

HOWELL Red Band MOTORS

HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Precision-built industrial motors since 1915

Hold Hat For New Flow of U.S. Dollars

Increase in U. S. defense spending in Canada anticipated . . . Will shift traditional across-the-border expenditure pattern . . . Big cut in purchasing expected in '53—*By F. Sanderson.*

From Ottawa sources it is learned that the U. S. is planning to boost its defense buying in Canada. While a definite estimate of the amount ticketed for defense spending during the coming 12 months is not available, the overall total may reach $300 million.

The proposed American expenditure is a reversal of form. Previously Canada's outlay across the border greatly exceeded reciprocal orders from the U. S. But for the coming year Canadian purchases are expected to run around $200 million, or $100 million less than U. S. purchases in Canada.

New Orders—Some $40 million in orders from the U. S. are pending. This business has not yet been signed up, but Canadian Defence Dept. is confident that it soon will be completed.

It is reported a large order is being considered for Canadian arsenals, which will be the first of its kind. It will probably be followed by others.

Electronic equipment and aircraft procurement are also slated for a general step-up, depending on Canada's ability to produce. In a number of other lines initial orders have been placed to get Canadian production started, and these contracts will be substantially increased.

Cutback in '53—U. S. contracts with Canadian companies are being constantly revised, some up and some down. But the picture as it now stands indicates American orders to Canadian producers will become more diversified and of much higher value. Contrasting the upswing in U. S. buying in Canada, Canadian purchases in the U. S. soon should start to level off with a big cut to come in 1953.

Record Production—Production of iron and steel in Canada is continuing at record levels. Pig iron output in May totaled 237,079 net tons, compared to 214,330 tons in April and 218,989 in May 1951. Steel ingot and castings production was also high in May '52, reaching 330,524 net tons.

Steel Co. of Canada Ltd., Hamilton, is going on a reduced production schedule for a couple of weeks because of vacations. Following the vacation cutbacks there is uncertainty regarding the company's production plans for late fall and winter months. Determining factor will be the availability of iron ore from the U. S.

Hudson Bay Mining & Smelting Corp. Ltd. has taken under option a group of 190 claims near Klaune Lake in the Yukon district. The company is arranging for an extensive diamond drill test of the property. Interesting showings of nickel and copper, plus values in cobalt and precious metals, are reported on the property.

Most important showing has a width of 48 feet from which assays are reported to run 3.2 pct nickel and 2.2 pct copper. Cobalt and precious metals have also been found. Only a limited amount of work has been done, so no estimate of ore potential is possible at the present time.

"I've never met him, but he must be wonderful if you can believe the financial pages."

Test Ore Deposits—A second setup for a diamond drill test of the iron ore deposits believed to exist at 3,000-ft depth in Norfolk county is nearing completion. The new drill test will be made 2 miles south of Simcoe on property optioned by United States Steel Corp. R. J. Longyear Co., North Bay, has the drilling contract and unauthorized visitors are barred from the site for the time being, at least, it is understood.

Preliminary work has started on construction of a $5 million pipeline for delivery of crude oil from fields in Central Alberta to Edmonton. Canadian Gulf Pipeline Co., a subsidiary of Canadian Gulf Oil, has been granted a permit to build the 115-mile pipeline. Company officials say there is enough steel pipe on hand to complete the line by next fall.

Expansion—De Havilland Aircraft of Canada, whose present plant has been sold to the Canadian government, has started preliminary work on erection of a new plant at Dufferin St. and Wilson Ave., North York. Cost has been estimated at between $3 million and $4 million.

Dominion Bridge Co. has completed negotiations for construction of a $10 million plant in North York township, adjacent to Toronto. The company has taken an option on a 30-acre site near Jane St. and Trethewey Drive. Officials state that construction work will not be started for some time, possibly because of the steel shortage. The proposed plant will be part of the company's five-year expansion program.

Expansion Request Hits False Note

DPA request for expanded production facilities implies new goal is above present industry pace . . . Estimate shows it is within easy reach . . . Backlogs drop—By G. Elwers.

Last week Defense Production Administration announced it had "called for" the machine tool industry to expand production facilities to a total of $125 million in new capacity, measured between Korea and Jan. 1, 1954. Reported straight, without comment or interpretation, this gives a very misleading impression.

It implies that DPA has set a new high goal, beyond what the industry has planned, and is calling for the industry to meet it. This is not the situation at all.

Interim Goal—In the first place, this is only an interim goal. It is subject to change as defense goals change.

DPA can't know how much any industry should expand for defense until the military fixes its defense goods needs. And the military doesn't know what it will need in the future.

Secondly, there is no need to "call for" the machine tool industry to add $125 million to its facilities. It is already nearing that goal.

How Much Expansion?—No one seems to have added up the amount of expansion completed or planned by machine tool builders. But a DPA official was able to give THE IRON AGE an informed guess last week.

Based on certificates of necessity already issued and pending, and adding an estimate of work undertaken without the aid of fast tax write-offs, this official guessed that expansion plans between Korea and now have totaled more than $110 million. It is probable that at least $15 million more will turn up between now and Jan. 1, 1954.

Just Whistle—Should DPA later decide it wants substantially more expansion, it will have to do more than just call for it. Machine tool builders are patriotic and want to do what is necessary for defense. But they want to be sure that what they are asked to do is really necessary. They're not sure Washington knows.

The industry can hardly be expected to hang the Sword of Damocles over its own head.

Liability — Unneeded capacity can be a serious liability when defense business fades, if the industry drops into the bust phase of its usual cycle. Machine tool leaders and the industry association have offered Washington suggestions on how to promote a high level of peacetime business and thus keep a strong, high-capacity industry ready for future defense needs.

But Washington needs to act on these suggestions, or a bust will surely come someday. If DPA ever wants more machine tool production expansion, it should call on other Washington agencies for action, not the industry.

Backlog Sags — Despite the sharp rise in new machine tool orders during June, the overall industry backlog dropped again in that month. A 26-point rise in the industry's demonstrated production rate more than compensated for the new orders, coupled with a continued rise in shipments. In June, the overall industry backlog dropped to less than 13 months.

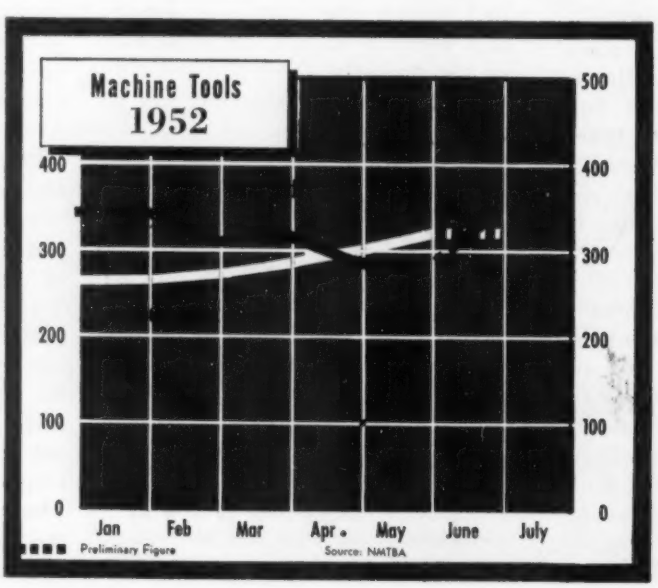
Question Program — Aircraft builders have not accepted with unrestrained hosannahs the Air Force heavy press program. They want some questions answered before they go ahead and design on the assumption that capacity for large forgings will be available.

One question: Do the plans include procurement of necessary attendant facilities for the big presses, such as heat-treat furnaces, blocking presses and flash trimming equipment?

Another question: Will dies be interchangeable, so that a breakdown on one press won't tie up someone's production?

And a big worry: Will adequate diesinking facilities and personnel be available?

Allow Unrated Machines — Planned for early July, the revised M-41 which permits shipping some unrated machine tools was finally issued last Friday.



The Iron Age

SALUTES

H. W. Christensen

A man who faces up to problems, he has raised standards for fellow industrial purchasing agents.

PURCHASING agents for many years were industry's whipping boys—subject to pressures from vendors to buy their product, from Engineering to do "brand name" buying, from Sales to favor prospects and from the clerk in Maintenance who wants 30 pct off on a TV set.

H. W. Christensen, director of purchases for U. S. Steel's Columbia-Geneva Div., has done much to free his cohorts in industry. He favors the old fashioned method of dragging problems into the open and threshing them out.

Chris is an old hand at purchasing—in the game 32 years now. He is an authority on scrap markets. In recognition of his leadership and efforts to raise the standards of the profession he was recently elected president of the National Assn. of Purchasing Agents.

In 1920 he joined the purchasing department of the old Llewellyn Iron Works of Los Angeles. When in 1929 it was merged into Consolidated Steel Corp., Chris became purchasing manager and assistant secretary. In 1933 he joined Columbia Steel Co. in sales and a year later became purchasing director.

Extremely articulate on the subject of gratuities, reciprocity, patronage, and other traditionally hush-hush subjects, Chris delights in addressing college and business groups on them.

Chris has held major posts in civil and industry groups and in government advisory jobs. He also somehow has found time to win a tableful of horsemanship trophies and indulge in his most languorous hobby—sunbathing.

"SH-RIP"

A BRAND NEW NAME IN STEEL

TO HELP YOU DEFINE CERTAIN FLAT ROLLED PRODUCTS MORE EXACTLY

SHEET STEEL and STEEL STRIP

Each has its own best uses. But to substitute one for the other indiscriminately may risk misapplying different grades and qualities of steel at the expense of disappointments in fabrication and service.

Yet buyers and sellers often confuse the terms. They refer to almost any *strip-sized* sheet steel as "strip" . . . as though the mere circumstance of width made any difference in the characteristics of the original steel.

ONCE SHEET, ALWAYS SHEET

Sheet steel, no matter how narrowly cut, in coils or otherwise, is still sheet steel. Let's not change the name.

Should it ever become expedient to call such material by another name, then we suggest

SH-RIP

—but never "strip"!

DEPENDABLE DAN
T.M. REG. U.S. PAT. OFF.

Steel strip may offer you certain very definite advantages either in reducing your overall fabricating costs or in increasing the sales value of your finished product. May we talk with you about the possibilities?

For helpful action call our nearest plant or office

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MIDWEST PLANT, 1601 South Wolcott Ave., CAnal 6-2442, Chicago 8, Ill.

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GRAND RAPIDS 2, MICH., 326 Keeler Bldg., GLendale 6-8569
INDIANAPOLIS 4, IND., 1509 Fletcher Trust Bldg., FRanklin 2333
JACKSON 18, MICHIGAN, 801 Reynolds Bldg., Jackson 4-6189
MILWAUKEE 10, WIS., 4022 W. Center St., NIlmp 2-1040
NEW YORK 19, N. Y., 250 West 57th St., COlumbus 5-4870
ROCHESTER 4, N. Y., 5 St. Paul St., BAker 1067
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Standard and Production Sizes or Cut to Actual Working Dimensions

The Iron Age

INTRODUCES

Rudolph Eberstadt, elected president, Central Iron & Steel Co.; and **Robert E. Craig,** elected treasurer. **Ernest C. Wilson,** elected secretary and treasurer, Chester Blast Furnace Inc. **H. B. Freeman, Jr.,** appointed director of purchases, Phoenix Iron & Steel Co., the Phoenix Bridge Co., and The Central Iron & Steel Co. All companies are subsidiaries of BARIUM STEEL CORP.

James A. Currie, appointed vice-president and general manager, ERIE FOUNDRY CO., Erie, Pa.; and **Macdonald S. Reed,** named vice-president and chief engineer.

Howard E. Isham, named assistant treasurer, U. S. STEEL CORP., N. Y.; **William H. Lang,** appointed assistant treasurer; and **John E. Hill,** elected assistant treasurer.

Earl N. Hoekenga, promoted to vice-president, industrial relations, THE GEO. F. ALGER CO., Detroit.

C. H. Libby, appointed supervisor, Internal Audit Section, CRUCIBLE STEEL CO. OF AMERICA.

Frank E. Payne, elected chairman of the board, CRANE PACKING CO.; **Karl V. Rohlen,** appointed president.

Benjamin Z. Katz, made assistant to executive vice-president, INSTITUTE OF SCRAP IRON & STEEL, Washington.

Charles A. Southwick, Jr., appointed technical director in charge of research and development, H. P. SMITH PAPER CO., Chicago.

Raymond A. Rich, appointed vice-president, Refrigeration Div., PHILCO CORP., Philadelphia.

Helmut Thielsch, appointed director, Applied Welding Engineering, EUTECTIC WELDING ALLOYS CORP., Flushing, New York.

LeRoy Kramer, Jr., named assistant vice-president of General American-Evans Co. Div., GENERAL AMERICAN TRANSPORTATION CORP., Chicago.

Rodney V. Nilsson, appointed manager, tin plate sales department, THE YOUNGSTOWN SHEET & TUBE CO., Youngstown; and **R. Paul Broadhurst,** appointed assistant district sales manager, Chicago territory.

Arch Morton, resumes position of supervisor, MORTON MACHINE WORKS, Ferndale, Mich.; and **Paul W. Taylor,** appointed manager.

Homer J. Humbert, becomes administrative assistant, PORCELAIN ENAMEL INSTITUTE, Washington.

Harvey O. Edson, appointed controller, ILLINOIS TOOL WORKS, Chicago.

E. R. Neumann, appointed manager, Dayton branch, FRUEHAUF TRAILER CO.

M. R. Fairlie, promoted to director of Lubricants Research, SINCLAIR RESEARCH LABORATORIES, INC.

Charles L. O'Brien, named superintendent, Indianola coal mine, Indianola, Pa., REPUBLIC STEEL CORP.

Ralph C. Holmer, joins the exploration staff as chief geophysicist, KENNECOTT COPPER CORP.; and **Julian W. Feiss** appointed staff geologist, Exploration Dept.

Henry W. Bauer, elected to the board of directors, AMERICAN CLAD-METALS CO., Carnegie, Pa.

Kenton Chickering, promoted to general sales staff manager, Oil Well Supply Div., U. S. STEEL; and **N. K. Schnaitter,** promoted to manager, commercial research section.

J. D. SWAIN, appointed executive vice-president, Electro Metallurgical Co., a division of Union Carbide and Carbon Corp.

CHARLES H. SHIRO, elected vice-president in charge of Pig Iron & Oil Field Tubular Goods & Equipt. Divisions, Kurt Orban Co., Inc., New York.

E. H. MANGAN, appointed executive vice-president, Electro Metallurgical Co., a division of Union Carbide & Carbon Corp.

Personnel

Continued

W. O. Meckley, appointed manager of engineering, newly formed Accessory Turbine Organization, Lynn River Works, GENERAL ELECTRIC CO, and **H. M. Wales**, named manager of sales.

Johnstone S. Mackay, appointed supervisor, research and development department, PITTSBURGH COKE & CHEMICAL CO., Pittsburgh.

Richard E. Krafve, appointed assistant general manager, Lincoln-Mercury Div., FORD MOTOR CO., Detroit.

C. R. Bucciero, appointed treasurer, EMPIRE TOOL CO., Detroit; and **Donald H. Gaines**, appointed secretary.

F. E. Peltier, appointed manager, Central Regional Engineering and Service, Cleveland offices, WORTHINGTON CORP.

Chester M. Adams, appointed general sales manager, BRIDGEPORT BRASS CO., Bridgeport, Conn.

H. B. Phillips, appointed sales manager, quantity Sales Div., CUTLER-HAMMER, INC., Milwaukee; **F. A. Wright**, named sales manager, District Sales; and **J. M. Cook**, appointed sales manager, Industrial Control Div.

George J. Zipf, appointed district manager in charge of Sales and Service, Chicago District, RAYTHEON MFG. CO.

James F. Puhl, named assistant sales promotion manager, FOLLANSBEE STEEL CORP., Pittsburgh.

Robert M. Critchfield, appointed general manager, Pontiac Motor Div., GENERAL MOTORS CORP., New York.

Forrest R. Old, appointed assistant sales manager, THE PENINSULAR GRINDING WHEEL SALES CORP., Detroit.

John H. Thomas, appointed manager of manufacturing, East Springfield plant, WESTINGHOUSE ELECTRIC CORP.

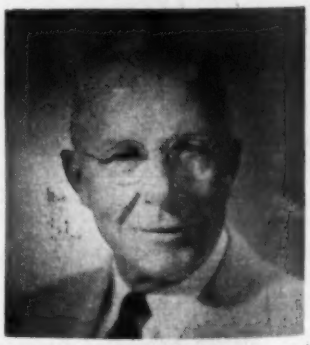
James B. Armstrong, appointed credit manager, Spang-Chalfant Div., THE NATIONAL SUPPLY CO., Pittsburgh.

John D. McLellan, appointed plant manager in charge of manufacturing operations, MARION ELECTRICAL INSTRUMENT CO., Manchester, N. H.; **Herbert L. Schachat**, named manager of Government Sales.

J. E. REHDER, appointed director of technology and research, Canada Iron Foundries, Ltd., Montreal.

HENDERSON E. McPHERSON, appointed assistant district sales manager, Pittsburgh sales office, Republic Steel Corp.

GEORGE S. BACHMAN, appointed director of research, Fiber Glass Div., Pittsburgh Plate Glass Co., Pittsburgh.



S. M. WASHABAUGH, promoted to director of sales research, The National Screw & Mfg. Co., Cleveland.

Personnel

Continued

E. R. Almdale, appointed manager, Atlantic District, CARBOLOY DEPT., General Electric Co., Schenectady.

C. J. Harter, appointed sales representative, THE R. K. LEBLOND MACHINE TOOL CO., Cincinnati.

Richard W. Maycock, appointed manager of ZCMI-WHOLESALE DISTRIBUTORS, Salt Lake City; **Kenneth Taylor,** appointed sales manager; and **Harold C. Kimball,** named merchandise manager.

Clyde J. Stottlemyer, appointed assistant plant controller, Toledo plant, THE NATIONAL SUPPLY CO.

John J. O'Neill, Jr., appointed manager, Research and Development Dept., Explosives Div., OLIN INDUSTRIES, INC., East Alton, Ill.

Jack Canady, appointed sales promotion manager, PALMER MFG. CORP., Phoenix, Arizona.

Irvin E. Frye, appointed manager, Foundry Div., FISCHER & ASSOCIATES, Cleveland; and **William J. Mullaney,** becomes contract engineer.

O. D. Metz. named manager, Motor Sales, THE EMERSON ELECTRIC MFG. CO., St. Louis; and **W. H. Thias,** appointed assistant manager, Motor Sales.

John Fletcher, joins the staff, NATIONAL RESEARCH CORP., Cambridge, Mass.

Henry Dreyfuss, named design consultant, AMERICAN MACHINE & FOUNDRY CO., New York.

Cam A. DeSmet, appointed assistant regional sales manager, Region 3, WILLYS-OVERLAND MOTORS, INC., Toledo.

Fhule L. Bell, appointed Pacific Coast industrial control engineer, WESTINGHOUSE ELECTRIC CORP. with headquarters in San Francisco.

C. Wesley Merritt, named sales manager, newly organized Railroad Dept., NATIONAL ELECTRIC PRODUCTS CORP., Pittsburgh.

Charles F. Trapp, appointed area manager, Detroit branch office, WESTINGHOUSE ELECTRIC CO.

E. E. Bauer, appointed manager of power transformer apparatus sales, GENERAL ELECTRIC CO., Schenectady.

Personnel

Continued

J. Elton Schoner, named assistant sales manager, DUCHESS-APPLIANCE MFG. CO., Alliance, Ohio.

John J. Redmon, appointed manager, A. O. SMITH CORP., Product Service branch, Dallas.

Walter C. Smart, appointed general sales manager, Motor Vehicle Div., TWIN COACH CO., Kent, Ohio; **G. J. Felton,** named manager, Service Replacement Parts Div.; and **Robert W. Jones,** appointed field service manager.

Max L. Strausser, appointed assistant zone manager, Truck & Coach Div., GMC, Philadelphia.

K. M. Patterson, appointed manager, headquarters industrial department, Apparatus Div., WESTINGHOUSE ELECTRIC CORP.

F. Eugene Englander, appointed sales manager, Richmond Div., GAR WOOD INDUSTRIES, INC., Richmond, Calif.

M. C. Peterson, named manager, national account sales, WARNER ELECTRIC BRAKE & CLUTCH CO., Beloit, Wis.

Michael Anthony, appointed production manager, REM-CRU TITANIUM, INC., Midland, Pa.

Boyce C. Bond, becomes sales supervisor, newly organized Fine Chemicals Div., PITTSBURGH COKE & CHEMICAL CO., Pittsburgh.

Robert C. Luckey, appointed safety engineer, Chemical Plants Div., BLAW-KNOX CONSTRUCTION CO., Pittsburgh.

OBITUARIES

Louis Charles Huck, 56, president, Huck Mfg. Co., Detroit, recently.

Ingwald M. Larson, 67, secretary, Claud S. Gordon Co., Chicago, suddenly.

R. C. Brower, 60, secretary-treasurer, and director, The Timken Roller Bearing Co., Canton, Ohio, recently.

Martin G. Basch, 71, chief engineer, Easton Car & Construction Co., Easton, Pa., in Easton Hospital, recently.

Space melting—

the Iron Age
FOUNDED 1855
Technical Article

Metals MELTED WITHOUT CRUCIBLES

By E. K. Okress
and
D. N. Wroughton
Westinghouse Electric Corp.
Bloomfield, N. J.

A block to production of pure high-temperature metals is that while impurities boil off during melting, others are picked up from any known crucible material. Westinghouse's unique solution is to melt such metals in space. Heat, stirring, and support are provided by magnetic fields from coils surrounding the melt. Alloying is simple. Process shows great promise in sintering applications.

A promising answer to the problem of making very pure high temperature metals is to melt them in space. This is necessary because though impurities boil away when these metals are melted, the melt picks up new impurities from contact with the crucible. The obvious answer is to melt metal without its being in contact with anything. This is being tried at Westinghouse through levitation melting, in which a metal is suspended by an electromagnetic field produced by coils surrounding but not touching the melt. When this is done in a vacuum or in an inert gas, the melt is in effect touching nothing.

Metals such as titanium, zirconium, vanadium, tantalum, and other similar metals need such a method of preparation. They enter into exchange reactions with all of the known suitable crucible materials, picking up impurities from beryllia, alumina, thoria, the borides, and other refractory materials. These reactions prevent the production of high purity forms of the metals. Among other disadvantages, a few hundredths of a percent of contaminants destroy the ductility of the materials, making them useless for many applications.

Indiction levitation was investigated as a method of solving this problem. Besides providing a field to support the metal, the induction coils provide heat for melting and cause induction stirring, thereby providing all the basic elements of the refining operation.

Initial experiments, in air, involved a single coil. Although a brass specimen was supported by the 10,000-cycle magnetic field established by the energized coil, it drifted laterally from the coil axis and fell out of the influence of the field. Force acting to maintain the specimen at the axis and above the coil was therefore inadequate. With more current applied the levitated specimen rotated, melted, and thereupon uncontrollably flowed down out of the influence of the coil field. The experiment was repeated with other metals with the same undesired results.

However, these initial experiments with brass, tin, aluminum and titanium specimens up to 1902 indicated that in the solid state, at least, vertical support by the alternating magnetic field could

"When the metal can be melted . . . it assumes the shape of a top and vigorous stirring occurs . . ."

be provided with the available alternator. It remained to investigate the magnetic field distribution required for stable levitation of molten as well as solid metals, including controlled draining of the melt. Fig. 1 shows in simplified form a schematic drawing of a typical circuit for levitation melting.

By a combination of theoretical considerations and judicious experimental work it was discovered that one way in which an adequate radial restoring force could be realized was by two coaxial loops of about 3-in. diameter in planes 2 in. apart. They are connected in series across a common capacitor so as to constitute a parallel tuned load to the alternator. The alternating currents in the coils are in phase opposition at all times. The currents in these fixed coils induce in the interposed metal charge eddy currents whose interaction with the inducing field gives rise to the necessary supporting and lateral restoring forces.

These make possible stable levitation of solid metal specimens, and are at least the principal factor in floating the subsequently molten metal when that can be done. Heating of the levitated specimen depends upon the power available, coupling between primary circuit and specimen, frequency, eddy current and hysteresis losses in the specimen, and heat losses from the specimen. When the metal can be melted while levitated, it assumes the shape of a top and vigorous stirring occurs. There is a tendency to rotate, but this can be suppressed by introducing some axial asymmetry.

Initially, difficulty was experienced in preventing molten metal from draining from the bottom. The field strength is least at the axis of the coil. This results in the tendency to drip. This was overcome by modification of the coil form, so that finally molten levitated aluminum could be wholly prevented from draining, or drained slowly, or drained suddenly, by merely adjusting the current properly. The modification consisted

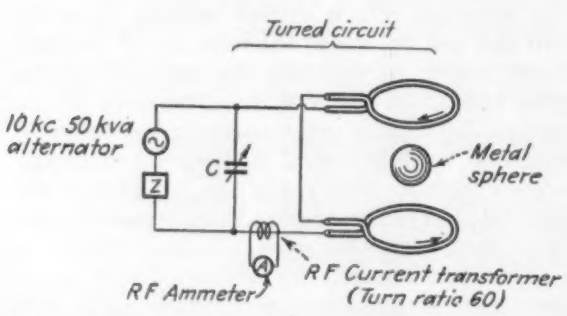


FIG. 1—Schematic representation of simplified version of basic electric circuit used in levitation melting.

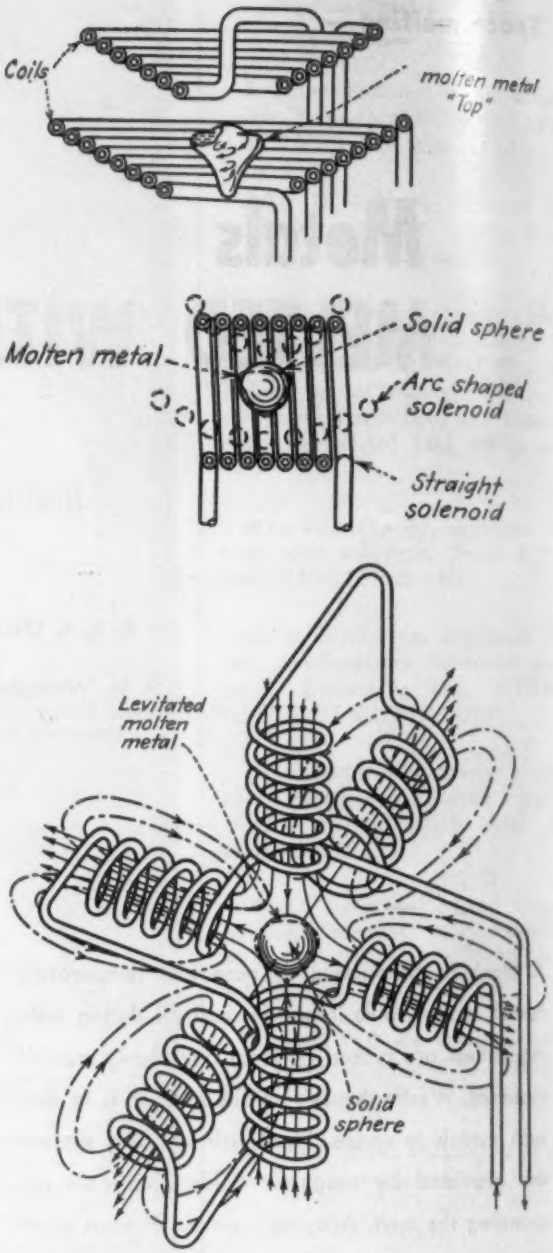


FIG. 2—Three types of coil systems which have successfully levitated metal. Top, concentric conical coils. Center, horizontal solenoid, solid lines, and horizontal arc-shaped solenoid, dotted lines. Bottom, single-phase system which produces rotating electromagnetic field to help stop drip.

of a lower coil of conical shape with apex down. This concentrated supporting fields at the tip of the melt thereby preventing pour.

When liquid aluminum was floated in air it soon became coated with oxides or other compounds. It was important to discover whether this oxide coat made liquid levitation possible. It seemed it could not be of much account, for the virorous agitation of the molten metal cracked whatever film was formed, so that islands of film swam on the surface. But stability of a melt with simple solenoidal coils might depend on preventing pour from starting at the bottom tip. A film of oxide just there might possess an efficacy out of proportion to

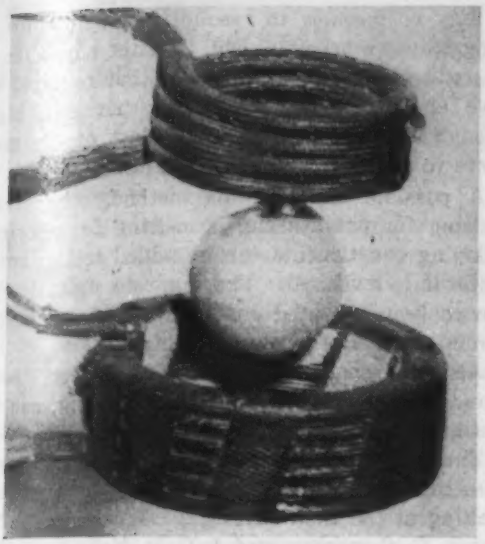


FIG. 3—Beginning the melting process. Here a round solid lump of metal has been floated and is beginning to heat.

air, in the liquid state, aluminum was floated with ease. Molten silver was supported between coaxial coils on one occasion, but drifted laterally out of the field. On other occasions, when melting commenced the liquid silver drained downward and dripped away from the lower surface of the remaining solid metal.

In a vacuum of 10 −4 to 10 −5 mm of Hg, there was no difficulty in levitating aluminum, silver and titanium in the solid state. On melting, however, aluminum usually dripped downward, even in a coil and with a current that would have supported the liquid if surrounded by air. Later, it was found possible to levitate approximately half an ounce of molten aluminum in a vacuum. A lump of titanium was almost completely melted while in levitation in a vacuum. Silver, however, always began to drain as soon as it melted.

Other, more complex, coil forms have been suggested which would create fields counteracting

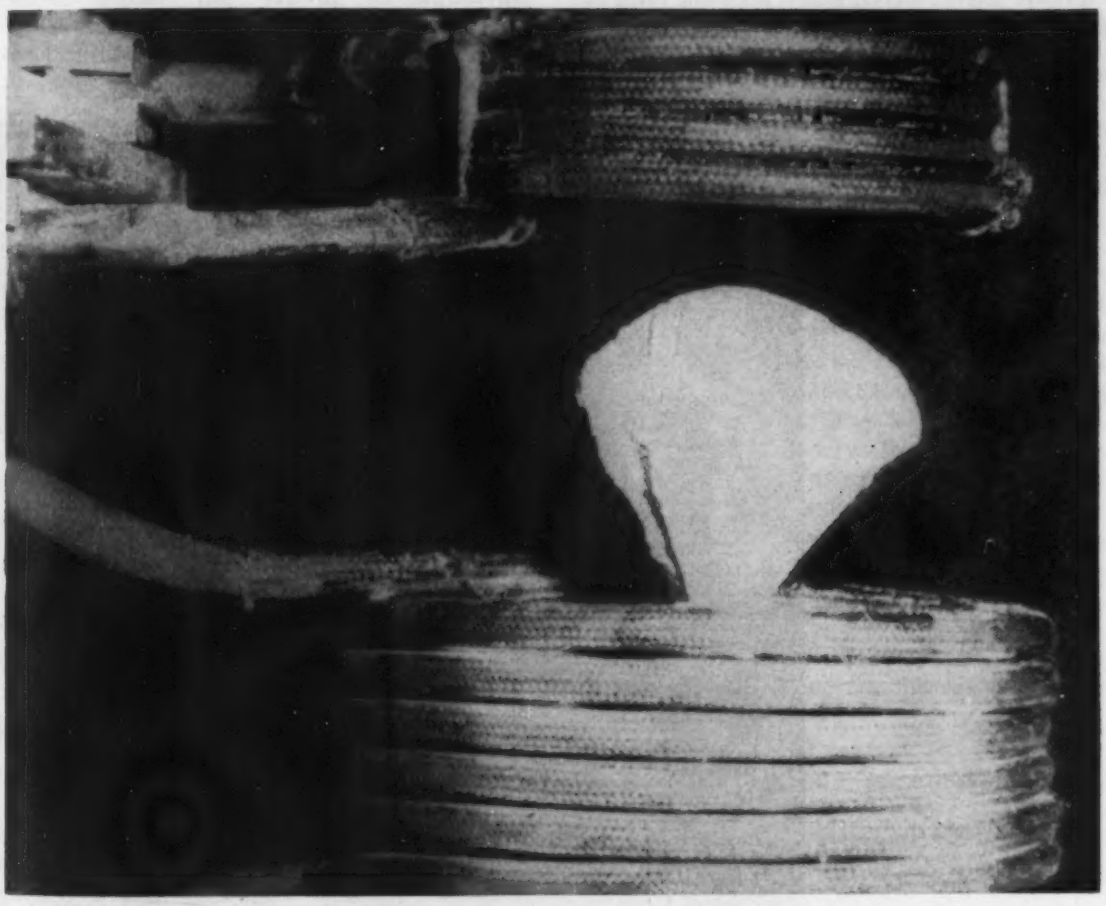


FIG. 4—The metal lump shown in Fig. 3 after it has become a liquid. The top-like shape of the melt is typical.

the area it covered. Since the chief applications of the method would of course be in a vacuum or a protective atmosphere, to prevent formation of oxides or other impurities, trials in a vacuum were made.

In air, in the solid state, aluminum, silver, and aluminum bronze were floated stably. In dripping. Another approach is to create motion of the molten metal, by an electrically moving field or a mechanically moving coil, so that inertia would prevent dripping.

Fig. 2, top, shows the concentric conical coil used to levitate aluminum, other metals. Figs. 3, 4 show melting of the metal. Solid spheres of

"Several metals have been successfully suspended in the molten state in air . . ."

metal have been levitated in horizontal solenoids, center, but the arc shaped horizontal coil shown by the dotted lines would probably produce greater stability. At the bottom is shown a single-phase coil system designed to produce a rotating magnetic field. This prevented dripping of molten metal by the inertia of the rotating melt. However, the system is complex, and a mechanically-rotated coil might be more satisfactory to achieve the same end.

But floating of the metal also appears to depend to some extent on surface tension and on the presence of an oxide film when such a film forms. The possible influence of oxide is suggested by the fact that it has not been possible to levitate molten silver, which does not form an oxide coating even when it is melted in air.

Eventually, after melting a metal to purify it, it may be possible to resolidify it before dropping it into a crucible, Fig. 5. This may be done by reducing the current below that required to give enough heat for melting but still high enough for levitation. Or a blast of air may serve to solidify the melt while still levitated.

A possible use for this method, other than melting for purification, is melting for alloying. Alloying constituents can be added to the metal while it is levitated. The vigorous agitation of the molten levitated metal by electromagnetic forces provides thorough mixing.

Also, the specimen can consist of metal powders, and sintering, rather than melting, can be accomplished during levitation.

The authors are from the Westinghouse Lamp Div. in Bloomfield, N. J. Working on levitation melting at the East Pittsburgh Works are P. H. Brace, G. Comenetz, and J. C. R. Kelly.

Several metals have been successfully suspended in the molten state in air. Current experiments are being conducted in vacuum. These investigations involve coil design, handling methods, and other details. Aluminum is being used for preliminary development work.

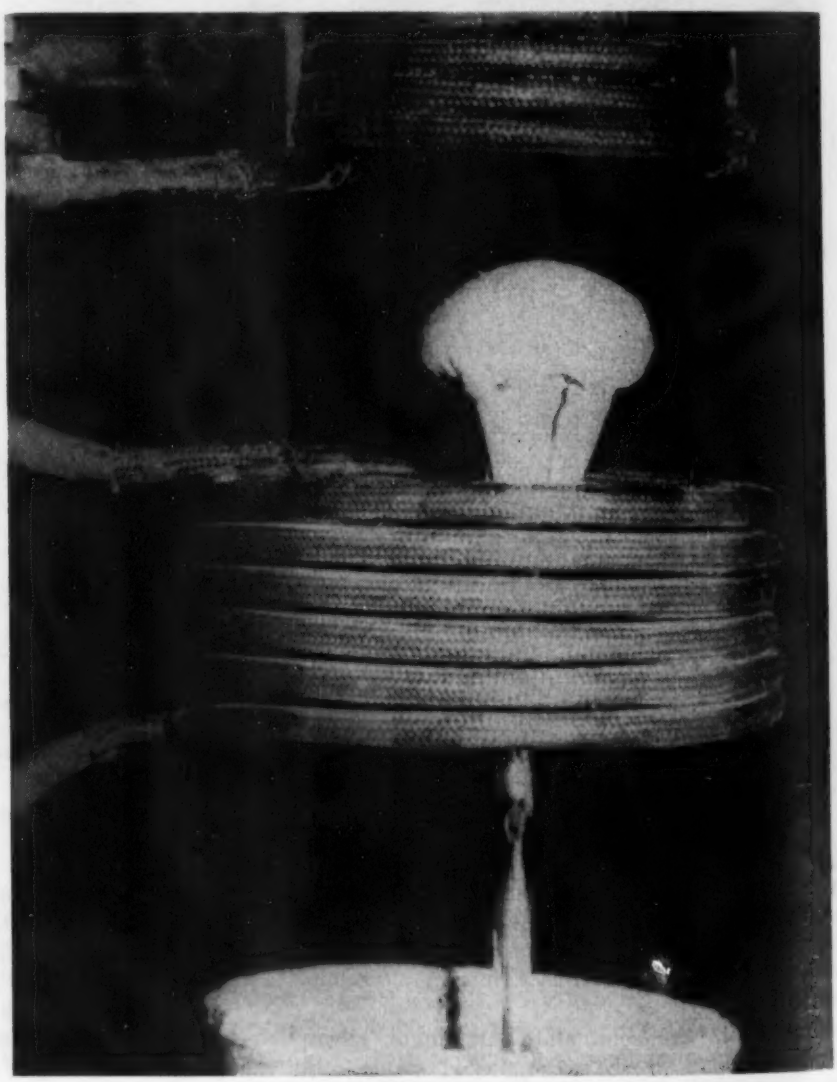


FIG. 5—Proper adjustment of the electromagnetic field permits the melt of Fig. 4 to drain through the bottom coil into a crucible. Resolidification while still suspended is being considered, to avoid any contamination of the molten metal by the crucible.

Simple Setup—

SURFACE GRINDER ATTACHMENT Generates Involute Gears

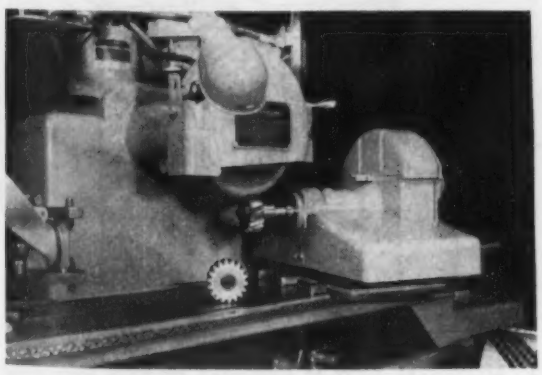
A new universal gear generator attachment for generating involute gears on surface grinders fills an important industrial void. Until now it has not been possible to generate a gear without first producing master gears, cylinders, forms, racks, or cutters. Only standard grinding wheels are required.

Application of this gear generating equipment are expected in product design work, maintenance, and even in connection with conventional high production gear processes. Precision gears suitable as masters for conventional high speed gear machines can be generated with this equipment. While only involute gears can be produced this type comprises more than 99 pct of industrial requirements.

The generator will be particularly useful for production of one-time gears, such as emergency replacement gear, or gears for pilot models of new equipment. In these cases, cost of making the necessary masters or hobs is high, and they require more time than producing the gear itself.

Even when the masters or hobs have been obtained, setup of the gear producing machine is costly for a small run because elaborate setups are required for production type machines and most conventional methods are mass production methods. Here the gear generator fills the void. If a small quantity of standard or nonstandard involute gears are needed in a hurry, these can usually be generated with the DoAll attachment on the manufacturer's premises in far less time than it would take to procure gears.

The gear is ground directly from a pre-hardened solid or pre-cut blank. Setups for plain, straight-spur tooth or helical involute gears from ½ to 6-in. pitch diameters, any diametral pitch from 2 to 100, and any pressure angle, are quickly made with sine bar and gage blocks.



GENERATOR UNIT shown mounted on surface grinder. Gear blank on generator mandrel is fed into wheel as table reciprocates. Wheel dressing unit is also part of the attachment.

The units comprising the attachment, a gear generating unit and a wheel dresser, mount on the grinder table. The blank, solid or pre-cut, mounts on the mandrel of the generating unit. As the table reciprocates, the blank is fed into and away from the grinder wheel.

Before teeth are generated, however, the wheel is dressed with the wheel dresser unit so that the sides taper at the desired pressure angle. A built-in sine bar used in conjunction with gage blocks determines angle of dresser diamond.

Position of the generating unit on the table with respect to the wheel is also set with sine bar and gage blocks, or a bevel protractor, to assure proper angle of teeth across the blank.

Mandrel linked with indexing plate—

The mandrel of the generating unit is mechanically linked with an indexing plate by which the blank is indexed for the desired number of teeth. Actual operating practice, where a solid blank is being used, is to gash the blank to approximately full depth with the wheel, using the indexing mechanism to establish the number and location of the teeth. The involute control mechanism is made inoperative for this operation. When the blank has been roughed out, the involute control mechanism is released and the blank is rolled as each tooth is ground completely to the proper contour and depth. Where larger quantities of gears are needed, time can probably be saved by having the gashing operation done on unhardened blanks with a milling cutter or other tool.

Involute curvature is obtained by rotating the blank through the proper arc as the valley between teeth is deepened. This rotation brings the working surface of the tooth to bear against the side of the wheel, thereby rounding this working surface in accordance with the desired involute curvature.

Obviously, this arc must differ for gears of different diameter. The extent of the arc is set with gage blocks. Virtually no calculations are required. A gage block one-half the length of the desired pitch diameter is slipped into a bracket at the rear of the unit and a sliding arm is moved against it and locked. The correct degree of rotation is then automatically obtained when the arm is swung between its limits.

The gear generator is not designed as a mass production tool, but for production of small quantities of precision gears, including masters, with standard or non-standard specifications. Splines, racks, sprockets, sectors and other toothed objects may also be produced.

Green grass grows all around—

Austempered lawnmower blades ARE HARD, TOUGH

Lawnmower blades take a beating through a season of grass cutting. To gain critical hardness and toughness, Yard-Man, Inc., Jackson, Mich., austempers its reel blades to develop hardness and strength in a relatively stress-free blade. Blades, of SAE 1060 and 1070 are arched and twisted to shape before heat treating. Hardening temperature is 1550° to 1600°F. Transformation temperature is 600°F. The Ajax salt bath installation is completely conveyerized; one man handles loading and unloading. After heat treat, blades test RC 48 to 52 and are heat treated all the way through.

By W. G. Patton
Asst. Technical Editor

A lot more engineering and modern metallurgy is built into your lawnmower than you ever suspected. If you own a Craftsman mower, for example, produced by Yard-Man, Inc., Jackson, Mich., and marketed by Sears-Roebuck, the reel, or rotating assembly, is adjusted at the factory to clear the cutting bar by just 0.003 in. This is equivalent to about the thickness of a sheet of newspaper. More important, Yard-Man wants you to be able to hold this close adjustment in service.

That's why austempering was adopted for hardening the blades of the reel—so adequate hardness and strength can be developed in a blade that is relatively stress free.

An Ajax heating unit is used to harden the individual blades after they've been arched and then twisted to the desired shape. Blades are suspended individually from wires and heat treated in lots of 55 blades. No quenching fixture is used. Assembly of the reel is accomplished without straightening or selective fitting. Following assembly in the mower, the reel is rough ground, finish ground and lapped.

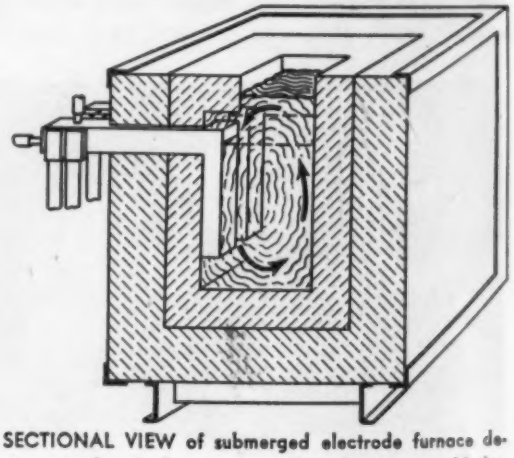
Prior to adoption of austempering in a salt bath, Yard-Man used induction heating. This method replaced an oil quench and draw hardening treatment.

Hardening of blades requires 5 min. Hardening temperature is 1550° to 1600°F. Transformation temperature is 600°F. The steel used is SAE 1060-1070. Nu-Sal H.T. salt is used in the high temperature furnace and Thermo Quench salt is used in the low temperature pot.

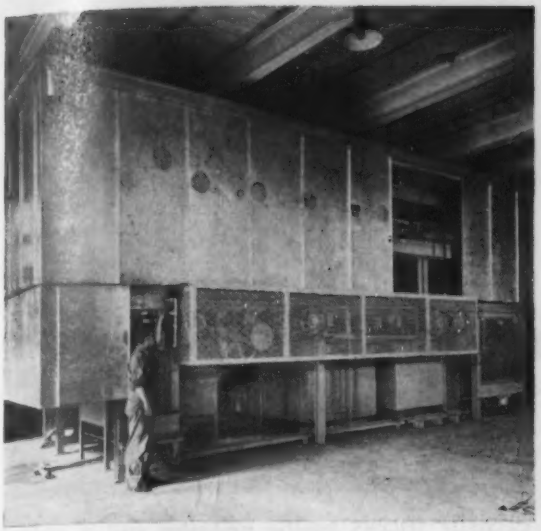
Preformed steel 1 in. wide and 5/32 in. in thickness is purchased in lengths suitable for cutting into 16, 18 and 21 in. blades. The 75-ton Bliss press which cuts the blades to length, simultaneously punches the necessary holes for riveting the blades to the reel spiders. Blades for the 16 in. mower have 6 holes punched per blade; larger models require 8 holes for each blade.

Following the cut-off and piercing operation, it is necessary to arch the blade to desired shape. This operation is performed in a 25-ton Bliss press.

Following this forming operation, blades are run individually through a special forming machine designed by Yard-Man engineers which puts the desired twist in the blade. The lead

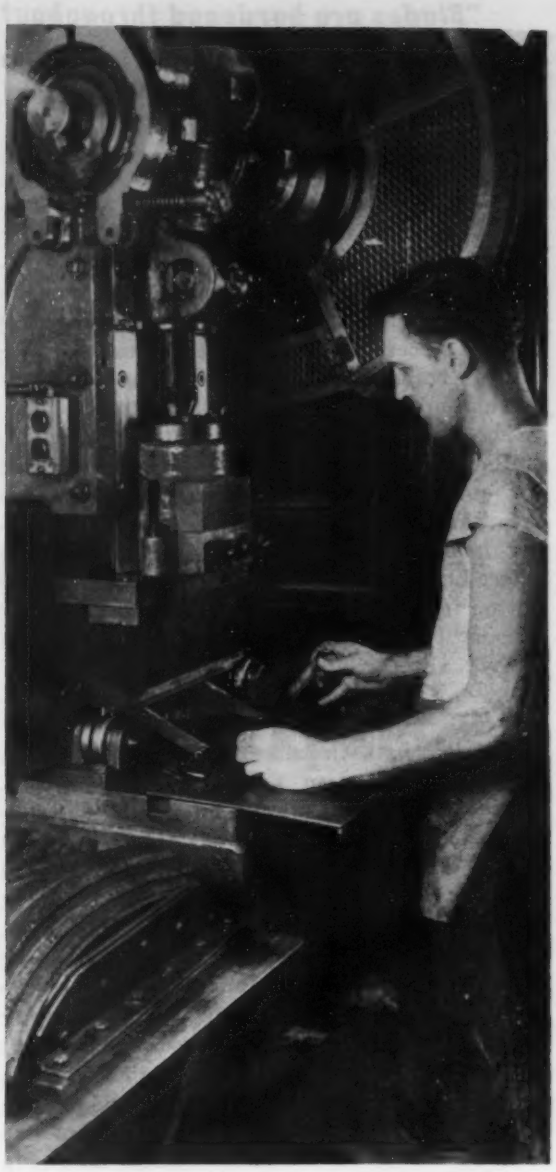


SECTIONAL VIEW of submerged electrode furnace design employed for austempering lawnmower blades. Dotted line indicates shrunken level of bath when frozen.

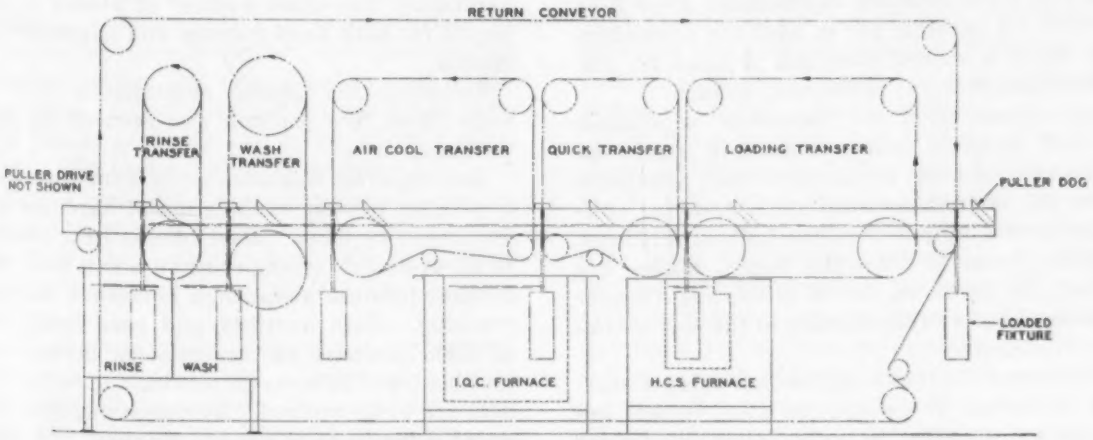


MODERN MECHANIZED furnace line at Yard-Man, Inc., Jackson, Mich., austempers lawnmower blades. Side view of equipment shows salt bath pots, drive chains and fume exhaust hoods of the in-line installation.

OPERATOR LOADS up to 55 blades on hooks. No quenching fixtures are needed and no draw is required.



FOLLOWING CUT-OFF operation, blades are arched to the desired shape in a 25-ton Bliss press.



HEAT TREATING installation is completely conveyerized. One man handles entire production.

"Blades are hardened throughout instead of on the cutting edge only . . ."

on the formed blade is equivalent to 28° 8 min. on a 6 in. diam spider. The amount of deformation of the cold, high carbon steel is severe.

The next step in the process is to harden the blade rapidly but without distortion and without the necessity for loading blades individually or collectively in a quenching fixture or straightening the part after heat treatment.

The Ajax hardening furnace is a large installation. Two salt baths, one for heating, one for quenching, and water cleaning bath are incorporated in the unit. Loading and unloading is done at the same end of the furnace where blades are hung on wire hooks. A starter button initiates the operation which is entirely automatic. Operations can also be controlled individually.

One man handles entire production

The salt bath installation is completely conveyerized. One man handles the entire production, including both loading and unloading of blades. One advantage of the new method is that blades are hardened throughout instead of on the cutting edge only, giving the blade greater ability to resist distortion in service.

Blades suspended from hooks are raised by the conveyer mechanism and lowered into the 1600°F salt bath. Following a 5-min heating cycle, blades are transferred to the 600°F salt bath where they are held for 5 min. Washing in hot water requires 5 min. after which the conveyer returns the hardened blades to the loading end of the furnace. Simultaneously a new load enters the furnace. Capacity of the furnace is more than 600 pieces per hr.

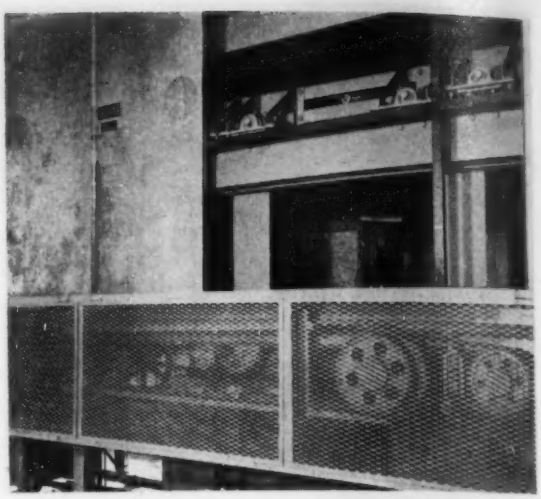
Submerged electrodes are used in the heating baths to assure long life through elimination of contact with air. Neither the electrodes or the pots have required replacement after 2 yr service. A ceramic pot is used for austenitizing while a welded steel pot is used for the lower temperature, isothermal quench.

An advantage of the Yard-Man installation is that chloride salts, introduced from the austenitizing bath, are automatically separated from the low temperature salts, assuring optimum quenching power of the bath at all times.

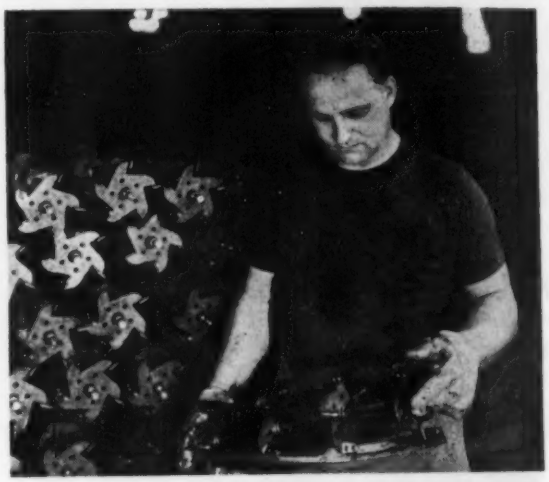
After removal from the hooks, blades are tested for hardness, Rc 48 to 52, and visually examined before transferring to the reel assembly department.

Hardened blades are assembled using a staking operation. Three stamped steel spiders are employed on 16-in. mowers; four for longer 18-in. and 21-in. machines.

Most Yard-Man mowers used five blades in



CLOSEUP SHOWS transfer mechanism used in modified austempering of lawnmower blades.



CUTTER BLADES are securely riveted to spiders. Thirty rivets are used on 16-in. mower reel.

the cutting reel. Thus, 16-in. mowers use 30 rivets for each reel. The number of rivets is increased to 40 for larger mowers. The position of each of these holes must be held during hardening. The same number of blades is employed for both hand mowers and power-driven models.

Following the staking operation, a shaft is slide fitted into position and secured by arc-welding.

Austempering was adopted by Yard-Man, Inc., to give the critical combination of hardness and toughness required. Reel blades heat treated to Rc 47-52 by austempering in a salt bath can be bent into the shape of a horseshoe without cracking. High ductility and good toughness at high hardness are essential in lawnmower reel blades if failures in service due to brittleness are to be avoided. Austempering has produced a reel that is harder, tougher, of higher quality and gives better service than any method of heat treatment previously employed.

Abrasives get rolling—

Uses for INDUSTRIAL COATED ABRASIVES Expand

Part II

By John E. Hyler
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Backstand equipment finds many uses, either as auxiliary equipment for polishing lathes, or as separate machines. Abrasive belt equipment is available for tool grinding, centerless grinding, polishing of metal sheets or metal in strip form. Some machines use formed contact wheels. Others, with no contact wheel or backup platen, have special uses.

Backstand grinding evolved from the primary idea of using an auxiliary "back stand" behind a standard polishing lathe, running an abrasive belt over a contact wheel held on the polishing arbor, and over a pulley held on the backstand. Actual polishing is done on the abrasive belt, as supported and driven by the contact wheel. The contact wheel is designed with considerable resiliency, to provide a small area on which the wheel is engaged. This yielding characteristic of the contact wheel affects not only the cutting action of the belt, but also its length of life.

The function of the backstand is to accommodate one or more idlers, thereby allowing an abrasive belt to be run. The usual backstand abrasive belt has approximately four times as large an abrasive area as the average polishing wheel. Consequently cooler action results, especially since air has access to both sides of nearly all the belt at all times. Both grinding and polishing operations are performed in this manner, including operations immediately preliminary to buffing and plating. Greased belts are often employed to provide a plating finish.

The bench type of backstand is often purchased in connection with a light polishing machine. However, it may be separately obtained, and used on bench grinders already installed. This latter arrangement brings the advantage of abrasive-belt grinding to the small shop, where there is intermittent need for a grinding wheel, and for a unit suitable for finishing small parts.

The amount of metal removed is usually in direct ratio to the speed of an abrasive belt, size of the abrasive grain, and pressure applied. A belt operating at high speed can use a coarser grit with less pressure, therefore with less heat

"Flexing action of the wheel . . . brings fresh cutting surfaces to the work . . ."

generation, to remove the same amount of metal. The coarser-grit belt will also have greater length of life.

Contact wheels are of many different kinds. Some wheels are made of cork combined with cloth and rubber. There are leather wheels, and wheels made of felt. Cloth wheels and rubber wheels are sometimes employed. In general, firmer contact wheels are employed for heavier grinding operations, and wheels of more yielding type for polishing operations.

A contact wheel should provide just the right amount of support against the back of the abrasive belt to invest the abrasive grits with a sufficiently-positive cutting action, yet eliminate glazing. There is a flexing action of the wheel against the back of the belt. This action continually brings fresh cutting surfaces to attack the work.

Among problems in backstand practice is use of suitable lubricants for waterproof belts. It is necessary that lubricants for belts range all the way from kerosene to heavy grease, to extend cutting life of the grits and to control cut depths. Among newer lubricants are the stick waxes, claimed in some respects to outperform grease sticks, and tallow.

On backstand idlers, facilities are usually incorporated for tracking the belt properly, and also for providing proper tension. This usually involves weights and springs. However, there are cases where power cylinders are used. It is important that correct tension be maintained, so the belt will move without buckling or wrinkling at the point of work application. Unless a belt is rightly tensioned, its cutting ability will be impaired and its life will be shortened.

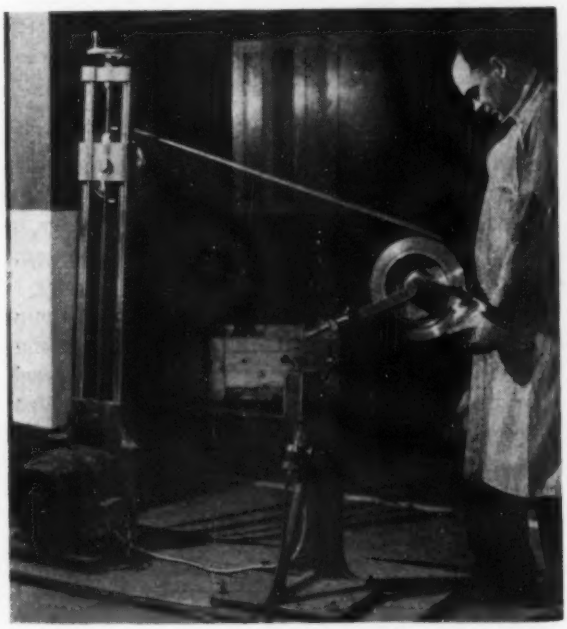
Work being processed at the backstand machine may be held in the hand, or supported by any type of rest, or indexed into place with a special work head. In some instances, small workpieces being polished may be revolved by a chuck held at the end of a flexible shaft.

One interesting adaptation of the backstand idea does away with the polishing stand as such. It has a similar layout, but the contact wheel is actually an idler wheel mounted on a short shaft, and the abrasive belt is pulled by a motor mounted in the rear. As a result, though the contact wheel may vary in diameter, a constant belt surface speed is maintained. And the belt is traveled over the contact wheel by a 100 pct pulling action.

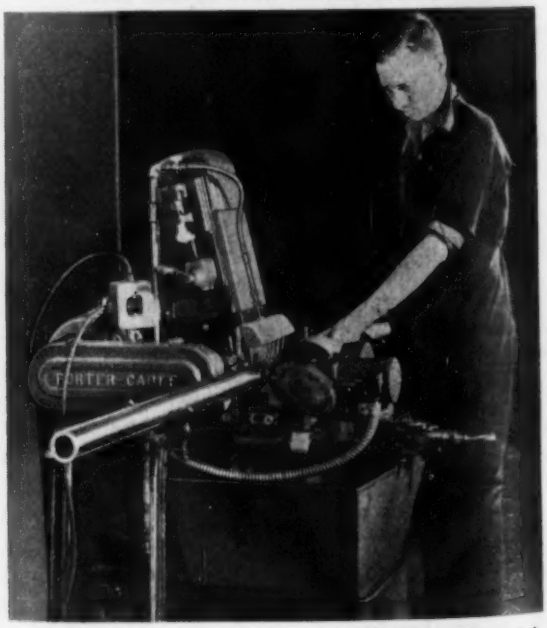
There are no obstructions around the contact wheel. Workpieces of any type or form may be manipulated all around the wheel. Consequently the operator can polish awkward or angular pieces impossible to process on other types of abrasive-belt equipment. The contact wheel may be either raised or lowered to suit the operator, so the machine may be operated either from a standing or sitting position.

Wheels may be cut to shape, while on the machine, to match the part being polished or ground. The belt may be traveled either forward or reverse and tracked on narrow, hard, soft, concave, or convex wheels. Changing wheels can be done quickly. Wheels of any diameter from 2 to 18 in. may be employed.

Cushion-type rolls may be employed as contact rolls, and the process has been applied to centerless grinding. Existing machines have



POLISHING a marine propeller. The machine is of the type on which the contact wheel is an idler wheel.



CENTERLESS grinding with an abrasive belt machine. Job is smoothing steel tubing. Belt lasts for about 135 pieces.

PORTABLE belt grinder being used to refinish a stainless steel ventilating canopy. Belt in this case carries aluminum oxide grit, specially tempered for metal finishing work.

WET GRINDING of circular steel dies against abrasive belt. Special fixture rotates dies against the belt during the grinding operation to assure firm, chatter-free removal of metal.

been adapted for use as centerless grinders, and machines have been designed especially for centerless grinding.

Abrasive-belt centerless grinders can be in line or in tandem, using successively finer grits on belts of succeeding machines. Thus a complete finishing and polishing job is accomplished with one class of the work.

In addition to setting up separate machines in tandem, duplex types of centerless polishing machines are built to operate under continuous production loads. One such machine will handle cylindrical work up to diameters of 1½ in., if their weight is not too great. It is possible to feed manually or by hopper.

Wet-belt centerless grinders have conventional regulating rolls and work-rest blades. They are provided with change gears, allowing a relatively wide range of feeds. Changes may be made from one belt to another, to obtain different grit sizes, or to replace worn-out belts, in a short time.

There are portable electric abrasive belt grinders, which can be used on large surface finishing jobs impossible to take to a stationary machine. It is not practical to apply coolant to any job being smoothed with a portable belt grinder, but it has been found helpful to wipe the work with cutting oil before the operation begins. The no-load belt speed of some of these tools is 1200 fpm and their weight is only 15¾ lb.

Reciprocating-pad sanders are also considerably used for removal of burrs, grinder marks, and other defects in metal surfaces before priming. Also they are employed to sand the primer coat before applying the final finish.

Handblock grinders or sanders are useful for flat metal parts where there is not enough such work to justify use of larger machines. They have a long abrasive belt running over two or more pulleys, and a horizontal workholding table. The table is moved by hand back and forth under the belt while the belt is held down on the work by a hand block.

By moving the hand block along the belt, grinding is accomplished over the entire length of the work. By moving the workholding table transversely under the belt, grinding is accomplished over the width of the work.

Many such machines have an independent pedestal at each end of the workholding table. These two belt standards can be placed as far apart as desired, to accommodate long work.

The workholding table has a vertical adjustment for work of different thicknesses. The table may be moved completely out of the way to make room for special work-supporting frames. Contoured work can be handled by using shaped hand blocks.

Some machines relieve the operator of the weight of the hand block. One machine of this type is referred to as a hand lever stroke machine. This has a steel bar extending from one machine column to the other, above and parallel to the table top. The bar has a ball bearing carriage, moved along the bar by a hand lever. A sanding pad, which takes the place of the ordinary hand block, can be very sensitively controlled with the hand lever. Machines of this type can be obtained with a single-roll or

"Abrasive belt continuous strip grinders have been found particularly valuable . . . "

triple-roll belt contact arrangement. Machines are provided for either dry or wet grinding.

An advanced machine has an automatic power stroke for flat grinding. It is fast cutting, because the roll-pressure unit used has only line contact. The cushion roll causes the abrasive grains to penetrate the surface and remove particles of metal with a cutting action. Cushioned hold-down rolls are mounted on the table, one on each side of the belt. These hold and flatten the sheet being ground. The stroke is adjustable by power. The contact roll is attached to a steel band, and reciprocated from both ends of the machine. The reverse action is smooth, with no lost motion. This type of machine has been found valuable for dressing press plates, and for grinding steel sheets. It is invaluable where the volume of such work is not great enough to call for the wide-belt type of grinder.

Abrasive belt grinders are being used more and more frequently in the tool room, not only for dressing surfaces on various tools, but also for actual sharpening purposes. Various die sections are quite often ground in this manner. Even offhand drill grinding is practiced to some extent.

The facility with which abrasive belts perform many different grinding operations has led to development of special machines. One machine has two different abrasive belts, backed by platens, one horizontal and one vertical.

An unsupported abrasive belt, without any platen or wheel behind it, will to a considerable degree conform to a convex surface pressed against it. This has led to certain interesting types of grinding. One machine is provided with an indexing feed table for holding workpieces, and with a variable-speed polishing belt drive. It was primarily built for polishing noses of 37 mm shells, but can be used on many different articles. The indexing table is fitted with a number of rotating chucks. As the table indexes, the parts are brought into contact with the belts and at the same time are revolved on their own axes.

OFF-HAND grinding of drills using an abrasive belt machine.

On certain types of abrasive-belt bench grinders, a wire brush is sometimes applied to the end of one of the arbors, and used for deburring gears.

Abrasive-belt continuous strip grinders have been found particularly valuable. On many of these machines, the steel strip is passed through the grinder by means of motor-driven reels, which also rewind. Machines of this type in many instances are employed for reconditioning strip after a cold-reducing operation. They are also employed for grinding the surface of hot-rolled strip after pickling and annealing.

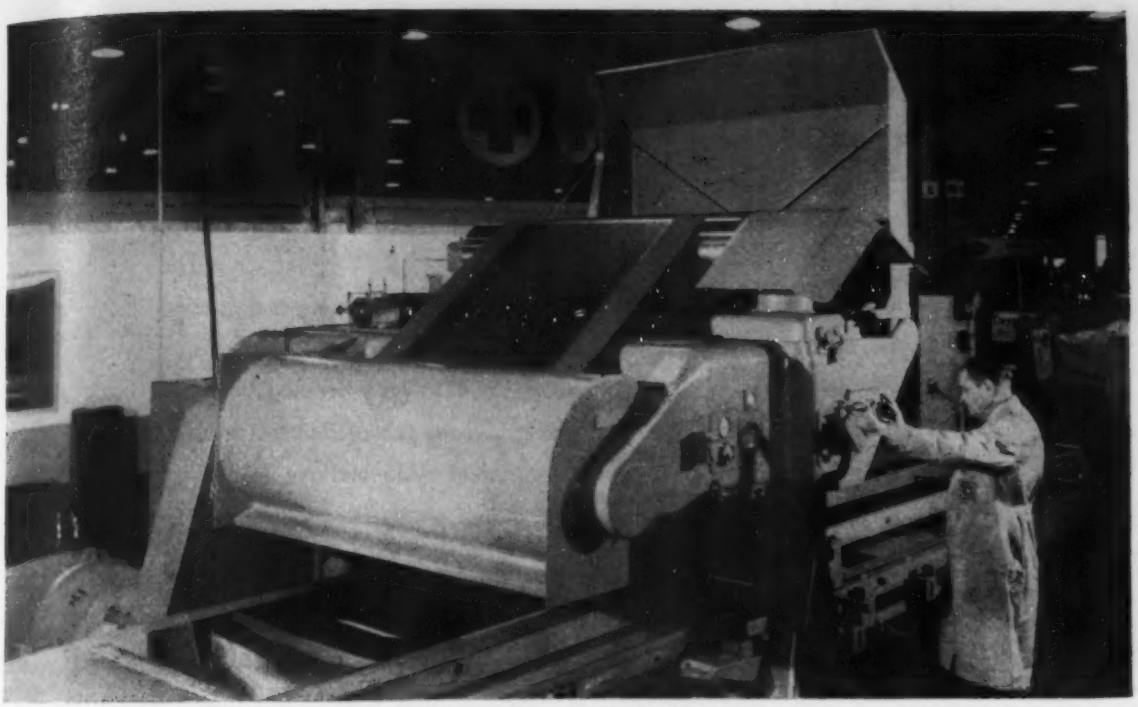
Stock salvaged by regrinding

There are many cases where rejected strip stock can be salvaged by grinding and re-rolling. Some of these belt grinding machines for strip are designed so that defective sections of strip may be ground as many times as necessary, by reversing the direction of strip and belt travel.

A contact roll is provided in these strip-grinding units. It deflects the abrasive belt slightly downward when in operating position. This insures that the belt will make contact with the work only at the grinding point. Working pressure is controlled by air, and is indicated on an air gage. A load ammeter is also provided, which indicates the amount of grinding load. By this means, the most efficient working point can be maintained by adjusting pressure on the contact until proper power consumption is reached. The contact roll is cross-compensating, to permit automatic adjustment for irregularities in thickness of material being ground.

Strip grinders for strip mill operation where heavy-duty service is required are primarily designed for dry operation, but may be equipped for wet grinding if desired. They will handle strip and bar stock up to 4 in. thick, 10 in. wide, and in lengths from 24 in. up. The grinding unit and drive pulley are mounted on a slide. All the working parts are completely enclosed in a steel case. A door provides ready access for belt changing. Air or solenoid automatic controls for roll pressure and belt tensioning may be fitted.

Units of this type may be mounted in tan-



LARGE MACHINE for abrasive belt polishing of steel sheets.

dem, thus allowing progressively finer grits to be used on succeeding machines. One such modification of this type of machine includes a recently-developed transangular polishing feature, which prepares material for final buffing. Another layout available is a unit especially designed for use ahead of a Yoder tube mill. This is a wet grinding unit, which pre-polishes the under side only of coil strip, before it passes into the tube mill.

Certain belt grinding machines are equipped with a conveyor, which adapts them for grinding small parts such as pliers, knives, gun parts, skate blades, and other small flat units. The conveyor belt on these machines has a stepless variable surface speed of from 20 to 60 fpm. Units of this type can be arranged in tandem and fitted with one long conveyor belt, passing under any number of grinding heads, each using a successively finer grit.

Special sheet polishing machines make use of very wide abrasive belts. These are for high production, as compared to the automatic-stroke units employed where only a small amount of work is to be done.

Similar machines have been developed for grinding and polishing of stove tops, registers, electric-iron sole plates, and various other flat or semi-flat articles.

Some belt sheet-polishing machines are available in sizes for finishing sheets 36, 48, 60, or 72 in. in width, in any length up to 16 ft. The abrasive-belt length on all these machines is 20 ft 3 in. They have a massive supporting arm for the idler rolls and contact rolls.

The metal sheet is supported on a beaverboard pad, which in turn rides on a hardened support roll. The support roll is raised at each end by controlled air pressure. This action serves to bring the work into sensitive contact with the belt. The action being compensating, it automatically gives equal working pressure over the entire width of the sheet. The contact roll is covered with a special oil resisting rubber composition.

One of the most interesting applications of abrasive-belt grinding is found on an internal tube grinding and polishing machine. In the dairy, food, drug and similar industries where products for human consumption are handled, the interior of tubing must be absolutely free from pits or other imperfections. There are other cases, for instance in boiler tubes, where a smooth interior is desirable. Internally-polished tubing requires less frequent cleaning, and is more easily cleaned.

The special machine for internal polishing has an abrasive belt which is passed all the way through the tube, after which its ends are joined to make it endless. This belt passes around a pulley on the driving motor and around an idler having a tensioning device, at the other end of the machine.

Grinding pressure is applied to the belt by an expansible grinding head, attached to a traveling ram rod. Compressed air passes through the rod into the head, expanding the head against the belt. The ram is power driven, and reciprocates the head through the tube.

The tube is mounted on rubbed-faced supporting and driving rolls which cause the tube to revolve during grinding. A water spray is provided for cooling the tube.

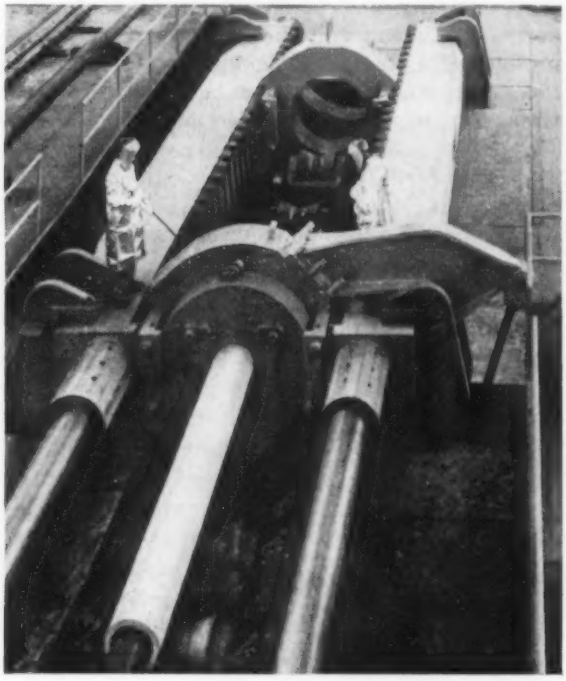
Boilermaker's helper—

New Press Pierces, Bends Boiler Parts

The first big hydraulic press which can double as a piercing and as a bending press is teamed with a 1200-ton hydraulic draw bench to introduce new trends in boilermaking. A 42-ft long bending beam can be moved into the press on tracks and the top section fastened to the moving platen to bend 50-ton steel plate sections, largest ever rolled. Press is also used for piercing.

A novel 8500-ton hydraulic press just installed at the Barberton, Ohio, plant of Babcock & Wilcox Co., can be used either to bend heavy plate or to pierce ingots. For the latter job it operates like a conventional piercing press (see drawing). Its most unusual feature is a large car carrying a plate bending beam and die, including manipulators and controls, on tracks that permit it to be moved into the press when the piercing pot is withdrawn.

Normally rated at 6500 tons but capable of 8500 with an intensifier, the big press was designed by Hydropress, Inc., and built by B & W in the Barberton shops where the company makes steam boilers. A 1200-ton Hydropress-designed draw bench follows the ingot piercing operation to form hollow forgings for boiler parts: headers, steam connections, etc.



DRAWING a hollow forging on new 1200-ton hydraulic draw bench at Barberton Works of Babcock & Wilcox Co.'s Boiler Div.

In a special demonstration last week the 42-ft long bending equipment was rolled into the press on its tracks to form half a cylinder out of 6-in. plate, some 40 ft long and weighing almost 50 tons. Engineers of Lukens Steel Co., which rolled the plate, believe this to be the heaviest plate ever rolled anywhere.

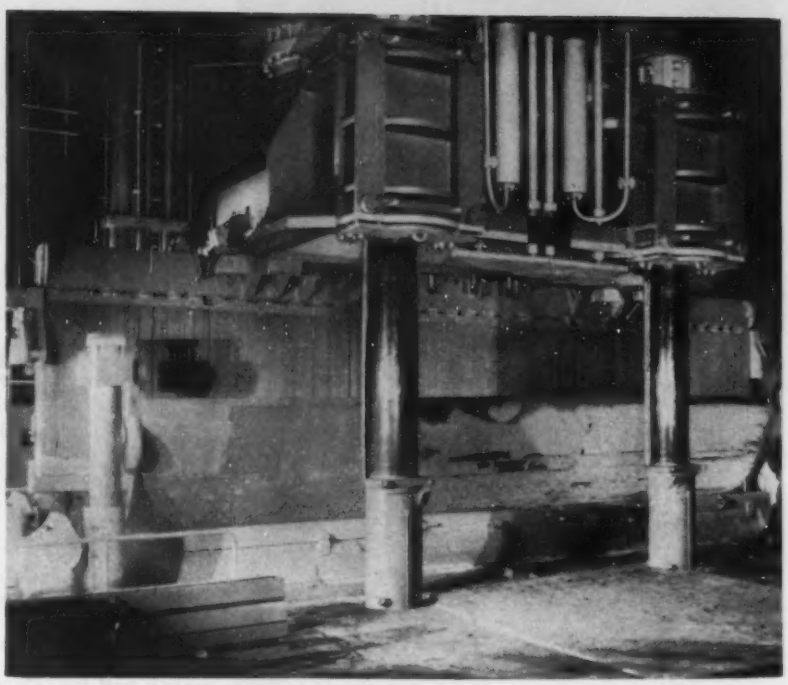
Press and draw bench are installed in a new shop built for the purpose. It has its own ingot and plate heating furnace and will soon have a reheating furnace and an electric melting furnace. Economics and the demand for higher steam pressures dictated installation of the new equipment.

The steam drum for a modern boiler may be 84-ft long and weigh as much as 200 tons. Standard practice has been to bend 10-ft long plate sections. The new bending equipment permits a drum of this size to be made of 42-ft sections with only three circumferential welds instead of the 10 required when a drum is made up of shorter pieces. The saving in X ray time is obvious (B & W uses a 2-million volt X ray machine to inspect welds).

Ingot piercing combined with the big draw bench permits fast drawing of seamless forgings; dies can be changed quickly, so short runs are economical. This unit will handle pierced 13-ton ingots, producing hollow forgings with a minimum of 8-in. ID and ¾-in. wall thickness up to a maximum ID of 26 in. with a 4½-in. wall. Lengths range from 22 ft for small walls down to 15 ft for the heaviest sections.

The piercing-bending press is built almost entirely of welded plate. Overall height is 64 ft. Each of the four 26-in. diam columns weighs 41 tons.

The method of handling plate during bending

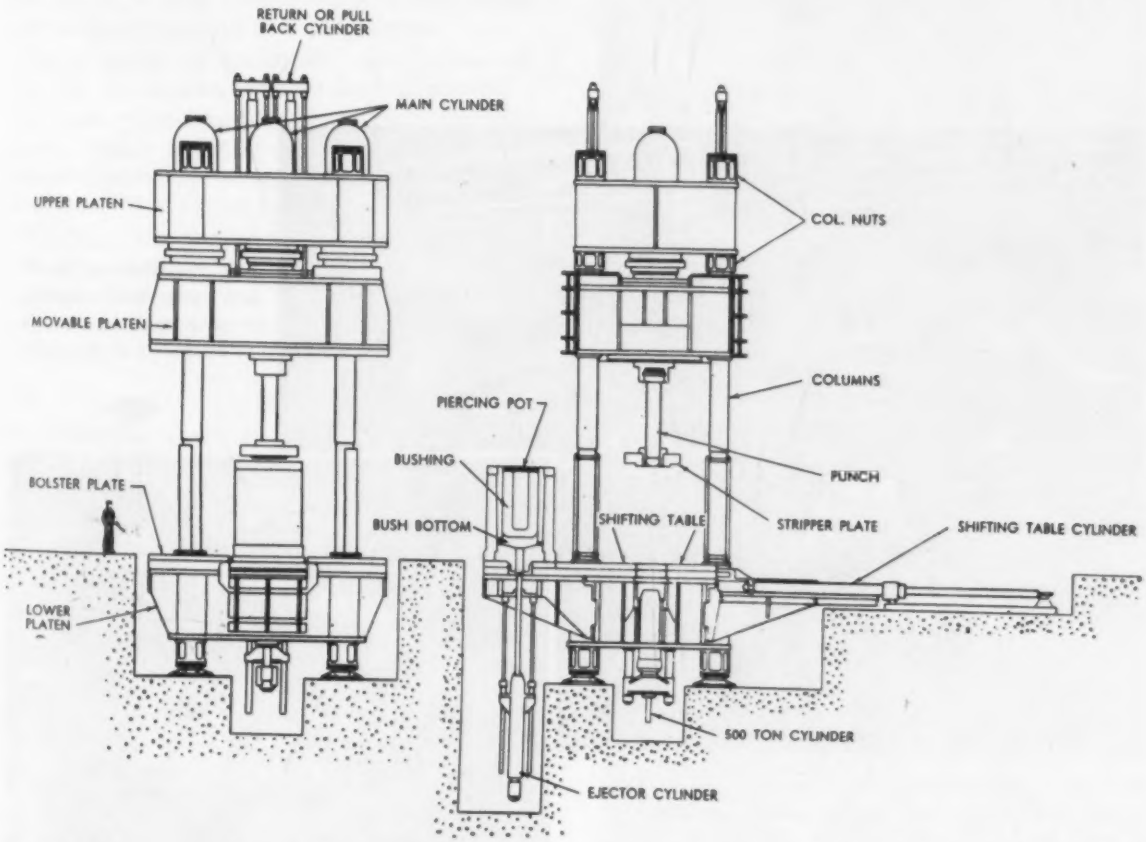


HEAVIEST PLATE ever rolled is formed into a boiler drum section with bending beam in 8500-ton hydraulic press. Chains on side of beam are to protect it from heat of the plate.

is unique. Normally, rings or loops are welded to the four corners of the plate and overhead cranes move it on the die after each bending stroke. However, this unit substitutes four 34-ton hydraulic cylinders for crane manipulation. Each cylinder is fitted with a hook to engage the loops on the plate. The cylinders each have a control station (all of this mounted on the car that carries the lower bending die into the press. The plate can be manipulated from any one of the four stations or from the main pulpit that controls all press operations.

Three Loewy pumps driven by 500-hp motors deliver 234 gmp at 3000 psi to supply pressure for these and other hydraulic units in the plant. These pumps work against a 7-bottle hydropneumatic accumulator system (2 water, 5 air) with electronic controls.

Alfred Iddles, president of Babcock & Wilcox, told a press conference that the new shop is part of the company's $30 million postwar expansion program dictated by rising demands for electrical power and progressive increases in steam temperatures and pressures.



SKETCH gives general arrangement of big press. This view shows piercing pot outside press. Bending beam and die are moved at right angles to piercing pot. Press stroke is 9 ft 6 in.

Three in one cleaning—

RUST INHIBITOR

Hosed on large steel parts

Cost of preparing tank hulls for painting has been cut at Cleveland-Cadillac Tank Plant. A new solvent combines three operations in one to remove grease and tar, clean chips and produce a rust-inhibitive phosphate coating. Time required for cleaning tank hulls and turrets has been substantially reduced. Solvent is applied by hose. Metal surface is brushed where needed. Solvent reacts and is then rinsed off. Metal surface is air blast dried. Figs. 1 through 11 show a variety of operations at the plant.

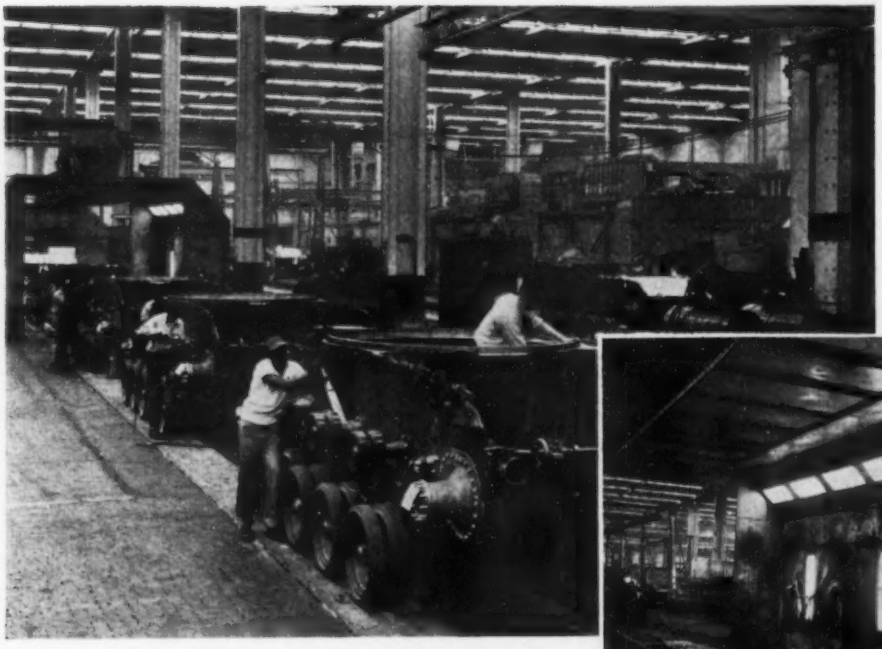


FIG. 1—Cleveland-Cadillac Tank assembly line, showing grinders touching up tanks before cleaning operation.

FIG. 2—Cleaning booth with side wall opening. Pressure tank for storage of cleaner is at the right.

By combining three operations in one—(1) removal of grease and tar with a solvent, (2) cleaning of chips and (3) producing a rust-inhibitive phosphate coating—time required to clean and coat tank hulls and turrets built at Cleveland-Cadillac Tank Plant has been substantially reduced.

This unusual cleaner was developed primarily as a single-stage cleaning method to be applied to large, bulky objects, particularly where heat cannot be used.

No heating of parts, cleaning solution or rinse is required. Handwork is reduced to a minimum. The process removes oil, grease, tar, loose scale, soot, loose rust, and sand from tank hulls and turrets. It may be applied over parts protected with plastic coating. The cleaner does not attack rubber-tired wheels or painted surface.

Solvent for grease, tar

The cleaner, developed by Whitfield Chemical Co., Detroit, is a viscous, light amber, clear liquid. It has high solvent power for oil, grease and tar and produces, simultaneously, a phosphate coating. There is no disagreeable odor and the material has a high flash point (above 200°F).

When applied to surfaces of steel, iron, aluminum, or zinc, the chemical application remains in place long enough to dissolve oil, grease, tar, etc. The solvent is then flushed off with cold water, thereby removing both dirt and solvent.

Water drains off uniformly, leaving the surface free of streaks. The surface dries with a light gray, dust-free, phosphate rust-inhibiting coating which improves adhesion and provides corrosion resistance where the paint coating may be broken. The cleaner is water soluble.

The cleaning method was developed for use with large, bulky sheet metal or cast or forged metal parts that do not lend themselves readily to washing, tumbling, or handling in mechanical equipment. Typical applications include steam

FIG. 4—A cold water rinse is applied to tanks at 50 psi, the normal water pressure at the Cadillac tank plant.

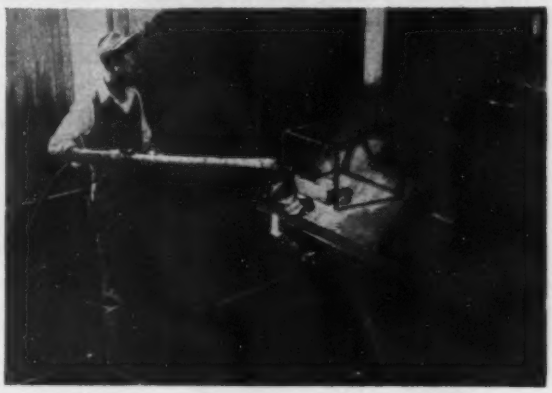
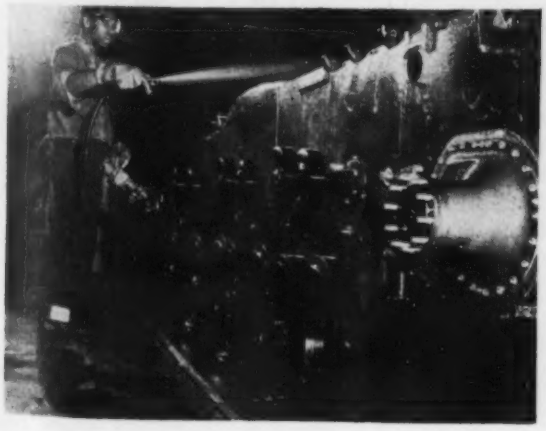


FIG. 5—Air blow-off of the hull. To provide desirable stiffness, the operator has applied wrapping to the hose.

FIG. 6—Paint booth, showing airlines, mask, paint tanks and lighted pits. Cleaner storage tanks are at the right.

FIG. 7—Masking prior to painting. Holes are plugged and machined surfaces are masked before tanks are sprayed.

FIG. 3—Applying cleaner to the hull. The cleaner is applied to both the exterior and interior of the tank hull.



"Health and fire hazards . . . breakdowns . . . have been eliminated . . ."

shovels, grave vaults, large rockets, and similar parts, including large castings or forgings or bulky sheet metal assemblies.

Equipment in service at the Cleveland-Cadillac Tank Plant includes one 60-gal pressure tank with necessary fluid line hoses and nozzles for applying the cleaner. A cold water rinse hose with adjustable nozzle is used for high pressure rinsing. An air hose is used for compressed air blow-off. No special heating or drying equipment is necessary.

A detailed description of the cleaning operation follows:

1. The cleaner is applied to the interior of the hull by hose with flat-spray nozzle. The cleaning area includes top and sides of the turret ring and sides and bottom of the hull, including cavities. Sides and bottom are brushed where tar has accumulated. Interior surfaces of the hull are recoated after brushing.

2. Apply the cleaner in same manner to exterior hull and under sides.

3. Permit material to react from 5 to 10 min.

FIG. 8—Painting interior of the hull. Unless this surface is thoroughly cleaned, oil or tar will bleed through.

FIG. 9—In this illustration, tanks are moving down the final paint conveyer line. Final inspection comes next.

FIG. 10—Turrets are similarly processed prior to painting. Safety goggles are worn during spraying.

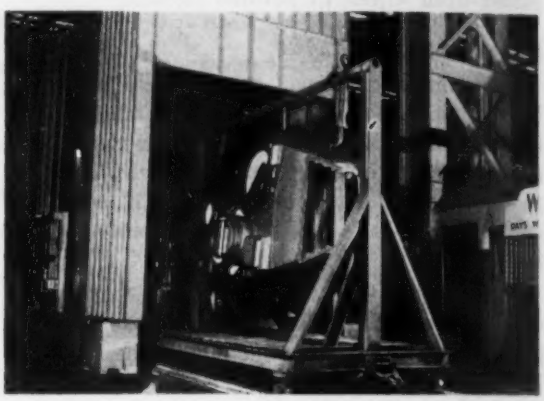


FIG. 11—Painted tank turrets leaving the drying oven prior to assembly. Fixtures were designed by Cadillac.

4. Rinse interior of the hull, including cavities, under side of top surfaces, sides, and interior bottom areas. Apply a second rinse to lower cavities. The exterior sides and bottom of the hull are then rinsed.

5. Following a compressed air blow-off of the interior, the exterior of the hull is also blown-off to eliminate trapped water. Residual surface moisture dries in the air.

The process replaces a cleaning method previously used for tanks which required three separate pieces of mechanical equipment. Three different cleaning materials were used in a 5-step-cycle which consumed approximately twice as much time as the present method.

The process may be used without providing expensive clothing protection for workers. Except in overhead applications of cleaner, only gloves and goggles are needed.

Health and fire hazards and possible breakdowns of mechanical equipment have been eliminated with the new method.

By combining three operations in one—solvent washing, cleaning, and rust-inhibiting with phosphate coating—the cost of metal preparation for painting has been reduced as compared with the previous methods used for tanks.

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Continued

Flame-hardening

Described in a new 8-p. booklet is flame-hardening of steel parts. The booklet discusses the advantages of this method of surface treatment and lists steels that can be hardened. Illustrations of several types of applications show the wide variations that can be obtained from this process. *Linde Air Products Div. of Union Carbide & Carbon Corp.*

For free copy circle No. 13 on postcard, p. 105.

Protective coatings

On the back page of a new folder is a handy listing and brief description of the physical and protective qualities of Prufcoat protective coatings. With this guide it is a simple matter to determine the specific sealer, primer and finish material required for any painting problem. In addition case histories of different Prufcoat applications are given. *Prufcoat Laboratories, Inc.*

For free copy circle No. 14 on postcard, p. 105.

Constant power

Would continuous operation of your electric materials handling trucks improve operations in your plant? If so, Ready-Power continuous-duty power units are the answer. Described in detail in a new folder, the units are composite, complete gasoline or diesel engine generator sets that produce power to operate electric industrial trucks, tractors, cranes and industrial locomotives. The generators are mounted directly on truck chassis. *Ready Power Co.*

For free copy circle No. 15 on postcard, p. 105.

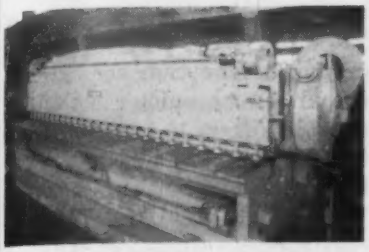
Polishing costs

Ever wonder just how much your polishing and buffing operations cost? E. Reed Burns Mfg. Corp. has issued a Cost Analysis Check Chart which simplifies computation of the exact cost of compounds used in specific operations. Because the company believes its compounds will do the same job more efficiently and economically, it offers to send samples for cost comparison tests with the compounds you are now using. *E. Reed Burns Mfg. Corp.*

For free copy circle No. 16 on postcard, p. 105.

NEW equipment

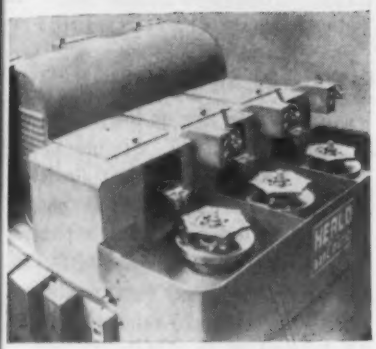
New and improved production ideas equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 105 or 106.



Huge shear cuts 24 ft of ¼ in. mild steel plate

This Cincinnati all steel squaring shear, produced for Douglas Aircraft Co., and capable of cutting 24 ft of ¼ in. mild steel plate, weighs approximately 149,000 lb. It has a cutting cycle of 20 strokes per minute. Hydraulic holddowns can exert more than 20 tons pressure for securely holding the work. Additional features are 24-in. throat or gap, 48-in. back gage range, light beam shearing gage, an air clutch control. *Cincinnati Shaper Co.*

For more data circle No. 17 on postcard, p. 105.



Bore-Matic for producing clutch plates

New vertical spindle cam operated three-station Bore-Matic is designed to provide multiple precision facing and step facing operations on clutch plates, bell housings, flywheel assemblies and similar parts. The three stations may be set up for simultaneous or progressive production runs and loading on any station may be done with others operating. Cams operating the tool slides control the cutting speed of tools and stroke; number of different cams provided makes a wide range of machine cycling available. Single and two-station Bore-matics are available for similar operations on a smaller scale. *Heald Machine Co.*

For more data circle No. 18 on postcard, p. 105.

Drilling machine permits boring 5-in. diam holes

Boring plus precision layout, drilling and reaming of holes are possible on a new drilling machine. Its heavy duty boring head with anti-friction bearings is equipped with an adjustable guide support that is moved down close to top of the work for precision accuracy during drilling and reaming operations. Extra large bearing area on boring head assembly base assures travel at 90° on two accurately ground ways across solid bridge. Two speed gearing, controlled by hand wheels, provides rapid traverse for rough positioning and two built-in Scan-A-Scales zero-in the work to tolerances as close as 0.0001 in. *Wales Strippit Corp.*

For more data circle No. 19 on postcard, p. 105.

Small punch presses have large press features

The Kenco 4 or 5-ton press is a small, heavy duty punch press of extra rugged, precision built construction. Offering advantages of four separate presses, it can be used for standard die space, extended die space, as a half press and as a horn press. Features include 12¾ in. throat; variable speed adjustable from 90 to 280 strokes per min; adjustable ram clamp with square hole; clutch drive safety feature that shears at excessive overload preventing press breakage; non-repeat safety mechanism; 3-in. drop in movable bed to accommodate larger dies and die sets; interchangeable parts. Presses weigh 275 to 450 lb. *Kenco Mfg. Co.*

For more data circle No. 20 on postcard, p. 105.

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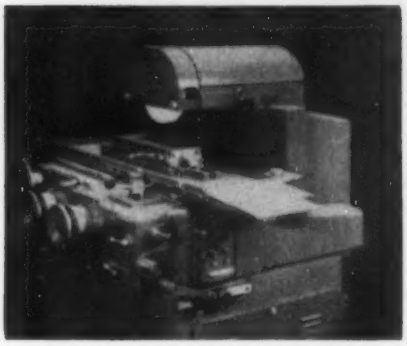
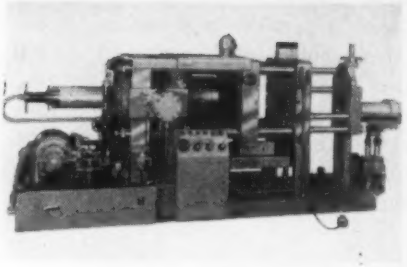


Surface grinder permits heavy stock removal

Massive construction of the Scrivener Super surface grinder makes it suitable for toolroom requirements and for continuous and heavy stock removal on production work. Rigidity of the motor drive permits heaviest cuts being taken without vibration. This model machine has a wheel 10 in. diam x 1 in. wide mounted on a 2-in. diam spindle 22 in. long, running at 1740 rpm. Spindle is carried in rigid phosphor bronze bearings with lubrication self-contained and automatic. Table has 8 x 18 in. working surface and longitudinal travel of 19 in., operated hydraulically or by hand. Smooth reversal at 40 fpm is possible. *Arthur Scrivener, Ltd.*

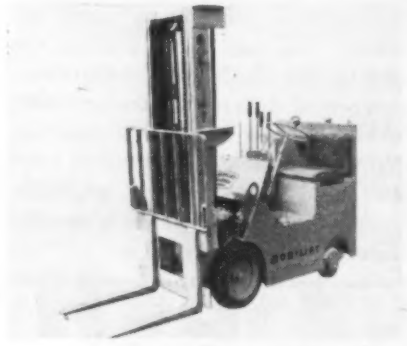
For more data circle No. 21 on postcard, p. 105.



Cold chamber diecaster is heavy duty type

Wedglock, a precision-built cold chamber diecasting machine, develops and holds 40,000 lb pressures without opening of die faces and flashing. Dies with 7½ in.-deep cavities can be run with an opening up to 15 in. A shallow cavity can be run at a 10-in. opening for faster cycling and increased output. Die opening can be set at any point from 10 to 15 in. Motorized central screw adjustment regulating die height makes possible adjustments to 0.001 in. Wedgelock construction eliminates toggle links. *Cuyahoga Industries.*

For more data circle No. 22 on postcard, p. 105.



Forklift truck features rear wheel suspension

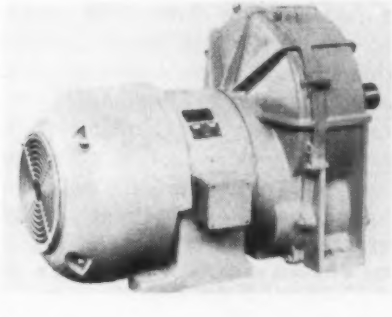
Mobil-Spring independent rear wheel suspension has been engineered into a new 3000-lb HR sit-down forklift truck. The suspension, designed to cut down driver fatigue and give the load and vehicle less shock, consists of a heavy duty spring and an airplane type shock absorber for each rear wheel. Mounting and dismounting are easy because there are no levers or housings to straddle. Simple Lev-R-Matic push-pull operating levers are conveniently located on the right side. Equipment is powered by a heavy duty air-cooled 3-cylinder engine and has two speed transmission. Standard mast heights are 63, 72 and 83 in. *Mobilift Corp.*

For more data circle No. 23 on postcard, p. 105.

Lighted magnifier speeds detailed examinations

An electrically lighted magnifier for general industrial use is designed to speed detailed examination of all kinds of materials and products through self-contained direct illumination on the object. The instrument comes equipped with either of two types of illuminator handles, one battery-powered, the other for connection with a 110-v power source. Either handle fits a reflector-type shade into which the magnifier snaps. Accessories furnished without extra cost are a non-illuminating handle and a metal tripod, which multiply the uses of the magnifier. The instrument's lens system magnifies five times and is highly corrected to eliminate aberration and distortion. *Bausch & Lomb Optical Co.*

For more data circle No. 24 on postcard, p. 105.



Geared electric drive for heavy duty applications

Larger totally enclosed fan-cooled geared motors have been added to the Sterling line of Slo-Speed electric power drives. Units are double reduction and available with Class I, II and III gears in frame size 364/365, and AGMA speed 155 rpm and slower in ratings from 5 to 25 hp. Bearings are mounted in the outer walls of the gear case and gears are mounted between these widely spaced bearings, permitting use of offset shafts and providing permanent bearing and gear alignment in uniform distribution of load. *Sterling Electric Motors, Inc.*

For more data circle No. 25 on postcard, p. 105.

Tellurium copper

With machinability approaching that of free-cutting brass and electrical conductivity 90 pct that of pure copper, tellurium copper alloy is suited for the mass production of electrical and electronic connectors and other parts. The alloy may be hot or cold worked. It is supplied in hard or half hard temper in the form of rod and bar. Tellurium copper is a patented alloy available from *Chase Brass & Copper Co.*

For more data circle No. 27 on postcard, p. 105.

Your own motor frame

Companies with design problems concerning motor adaptation can mount Reuland rotors and stators in frames of their own manufacture. This permits practically unlimited mounting versatility, the shortening of the unit's overall length, streamlining of appearance and a lowering of manufacturing costs. Manufacturers who wish to do so can supply their customers with motors bearing their own nameplate. *Reuland Electric Co.*

For more data circle No. 28 on postcard, p. 105.

Temperature controller

For accurately controlling operating temperatures ranging from −100° to +600°F new electronic temperature controllers using resistance bulb sensitive elements have been announced. The instruments are built with single or duplex control action and are available in six different temperature ranges. Standard resistance bulbs designed for use with the controllers, cover practically all process applications. *Thermo Electric Co., Inc.*

For more data circle No. 29 on postcard, p. 105.

Turn Page

Scoop attachment for handling dry bulk materials

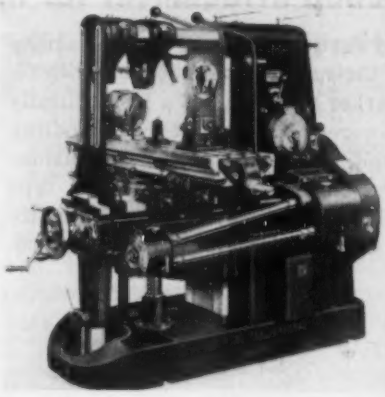
To further increase the versatility of their standard fork trucks, Elwell-Parker has designed a hydraulically powered scoop to permit handling sand, coal, sulfur, etc. Dimensions and capacities vary with the type material to be handled and the size truck to which the scoop is attached.

A 4000-lb capacity fork truck takes a 25 cu ft or 3200 lb capacity scoop. A double acting hydraulic cylinder controlled by a valve on the truck's cowl provides positive control of the scoop body to facilitate loading and dumping. *Elwell-Parker Electric Co.*

For more data circle No. 26 on postcard, p. 105.

New Equipment

Continued



Milling machines

A new line of Swedish milling machines, manufactured by the Koping Co. are available in horizontal and vertical types. Complete versatility is made possible through a broad group of accessories and adjustment controls that particularly suit the Koping milling machines for both toolroom work and production work. Close precision work and rugged dependability under all operating conditions are claimed for the machines. *American Pullmax Co., Inc.*

For more data circle No. 30 on postcard, p. 105.

Roofing compound

Dasruf, a new roofing compound, is fire-resistant and will not alligator during long exposure to sunlight. The coating resists combustion even when subjected to 200°F of open flame. Sparks cannot ignite Dasruf; it contains no solvents. It is applied with brush or spray on damp or dry surfaces. Red, green, grey and black shades are available. *Dasco Chemical Co.*

For more data circle No. 31 on postcard, p. 105.

Flexible couplings

A line of Cone-Drive standard bore couplings are for Cone-Drive worm shafts, gear shafts, and electric motor shafts. They are gear type with seven parts: a sleeve, two hubs, two neoprene seals and two snap rings. Design is easily disassembled; is sealed to keep weather out and lubrication in. Hubs and sleeve are SAE 1045 steel forgings with 90,000 psi tensile strength. Made in 22 bore sizes from ¾ to 6½ in. diam with capacities from 4 to 550 hp. *Michigan Tool Co.*

For more data circle No. 32 on postcard, p. 105.

Parting compound

Sintering together of powdered metal clutch plate compacts in a sintering oven can be eliminated by using an aqueous dispersion of semi-colloidal graphite, according to the S. K. Wellman Co. This parting compound, known as Prodag, produces a slippery dry film which is unaffected by any temperature met in the sintering oven, and decreases compact rejects. *Acheson Colloids Co.*

For more data circle No. 33 on postcard, p. 105.

Starter spring

Gasoline engine recoil springs with improved performance characteristics are available in sizes from ⅜ in. x 0.025 to 0.042 in. x 6-12 ft long. By using special high-carbon steel and annealing procedures, this new longer, thinner spring does not require a larger size holder, and is said to provide more pre-wind and reserve power to insure positive, easy starts. *Sandvik Steel, Inc.*

For more data circle No. 34 on postcard, p. 105.

Wire terminator

The Amp-O-Lectric wire terminator is an automatic machine that applies solderless terminals to wire, at rates of 4000 per hr. Terminals in strips are fed from a reel into the machine. Pre-set precision crimping dies cut the terminal from the strip and crimp it to the wire. The machine is provided on a loan basis on receipt of an order for specified quantities of A-MP solderless terminals. *Aircraft-Marine Products, Inc.*

For more data circle No. 35 on postcard, p. 105.

Strike End Triggers Steel Procurement Tangle

Consumer pressure mounting . . . All sources being tried . . . Market will be tight through '52, maybe until next spring . . . Military slice may double . . . Conversion demand booming.

Settlement of the steel strike has touched off one of the wildest scrambles for steel in history. Consumers are exerting almost unbelievable pressure on all possible sources in efforts to keep plants going, or get them started again.

Conversion, foreign and gray market steel sources are being canvassed for all they are worth. Chances of getting much help from these are remote. And the cost is terrific. But desperation is making steel users play the long shots.

Their anxiety is well founded. Steel sales officials contacted by THE IRON AGE believe consumers are going to have a rough time placing new orders for the rest of the year. They will be told the bad news as soon as mills have had a chance to adjust order books to make way for military and other directives which are going to take precedence over all other orders.

Write Off 19 Million Tons—A special steel task force has been called to help controls officials with the herculean task of repairing the Controlled Materials Plan. Problem is how to discount the loss of 19 million ingot tons of steel that had already been divided among steel users. A good many consumers are bound to come out with smaller pieces of the steel pie.

Several responsible sources told THE IRON AGE that mills at present have enough CMP orders on hand to take up almost all their production for the rest of the year. This means that CMP will be badly tangled for several months—even if fourth quarter allocations are severely reduced, as now seems likely.

To make matters worse, military and atomic energy customers will have to be given first crack at all steel produced. No matter who the intended customer may be, or how firm his order, he faces the risk of having the steel lifted out of his hands at the last minute by a special directive from Washington.

Price Boost

The steel industry has been granted a price increase to offset higher total costs. But the avalanche of paper work is holding up issuance by producers of new price lists. Rise will total $5.20 per ton on carbon steel items, slightly higher on stainless, and will probably be retroactive to July 24, the date of the settlement. Price columns in THE IRON AGE will be brought up to date as soon as new figures are issued.

Use of such overriding priority means there will have to be a constant reshuffling of production schedules by the mills. This is aggravating and costly. And it certainly won't help mill relations with frustrated customers whose orders are bumped.

May Double Slice—Before the strike the military take, including B-product components, was about 20 pct of steel production. For the next few weeks the addition of special directives may cause their share of output to be nearly double.

In addition to their regular quotas, some military customers will be pressing to make up losses suffered during the strike. This is especially true where production of military goods was halted by the strike.

All this adds up to a tight steel market for at least 6 months. It might last until the second quarter of next year. On some products the effect of the strike will be felt for a year. This is because of the long lead time between placing an order and final fabrication. On jet engine, for example, lead time for some special alloy steels is 9 months. On the alloying elements the lead time runs as long as a year. Because of this, aircraft production will run into complications for many months.

High Conversion Demand—The steel conversion market, which had withered on the vine, is now in full bloom again. Conversion involves the purchase of semi-finished steel from one source and having it shipped to another source for rolling into the desired form. Final cost may be 50 pct more than regular mill price. Judging from costly agreements made so far, nothing is being turned down. Conversion will boom for at least the next 6 months.

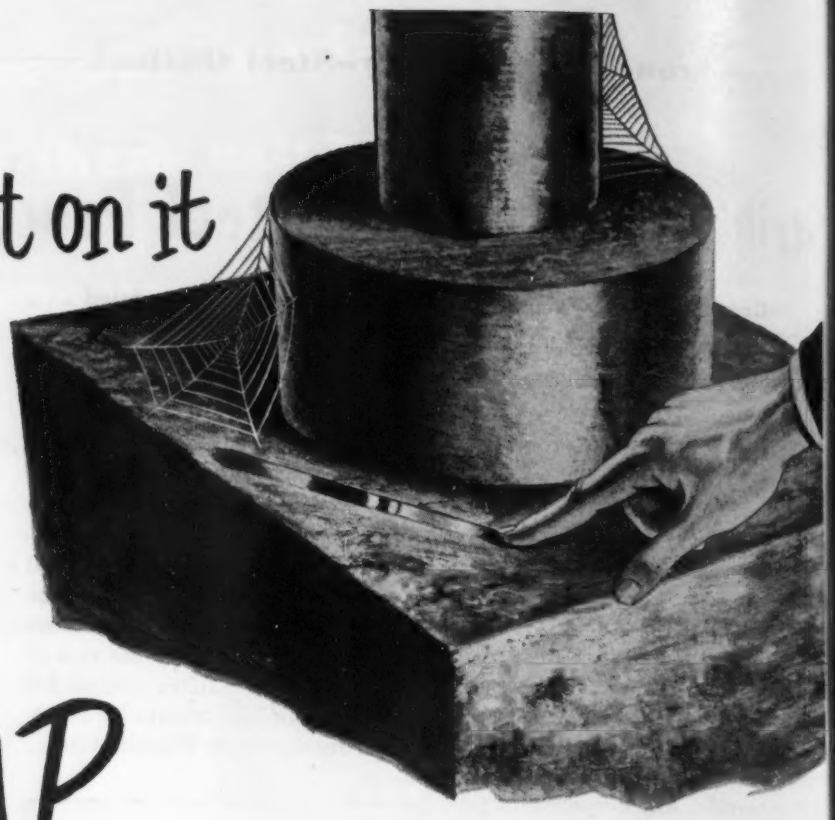
Steel producers are struggling to get their facilities back into production as quickly as possible. Some furnaces will have to be rebuilt because of damage resulting from cooling and heating. It will probably take 2 weeks to again reach a high operating rate. Production and maintenance crews will be wrestling with chronic difficulties for a month or more before the industry is again operating smoothly.

Steelmaking operations this week are estimated at 41 pct of rated capacity, up 31.5 pct from last week.

If there's dust on it

it may be

precious scrap!



If it's SCRAP

it's needed to make STEEL!

One half of all the raw materials used in steel production is *scrap.*

Today, the mills aren't getting enough iron and steel scrap to keep up with greatly increased steel production.

AND WHAT IS SCRAP?

Scrap is many things. Here are three:

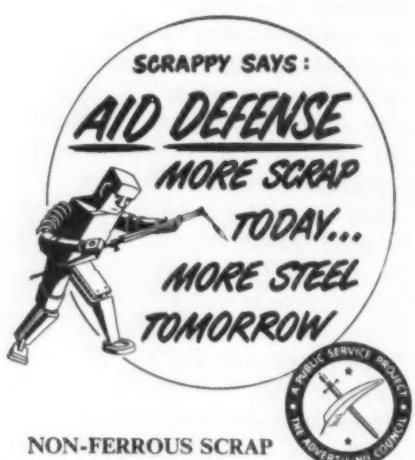
1. the "left-overs" of iron and steel production, fabrication and machining.
2. junked autos and old farm machinery.
3. obsolete iron and steel equipment in factories, such as old machinery, tools, dies, jigs, fixtures, chain, valves, etc.

But—the "left-overs" are not great enough today to fill the unprecedented demands for steel production.

And, with replacements scarce, less junked autos and farm machinery have entered the scrap supply lines.

So—only by digging out all the never-to-be-used odds and ends of broken, worn-out, and obsolete factory equipment . . . can mills and foundries get all the scrap they need.

If they don't get it, steel production rates may be severely hampered . . . and our country's effort to maintain military strength and civilian economy *at the same time*, will be crippled.



NON-FERROUS SCRAP NEEDED, TOO!

It's YOUR Job to Furnish More Scrap

Institute a steel scrap salvage program in your plant. Appoint one top official in your company to take full responsibility. Have him consult with your local Scrap Mobilization Committee and local scrap dealers. The nearest office of the National Production Authority, Department of Commerce, can tell you who your local Scrap Mobilization chairman is.

Do this now. Write for a copy of the booklet, "Top Management: Your Program for Emergency Scrap Recovery", to Advertising Council, 25 W. 45 St., New York 19, N. Y.

This advertisement is a contribution, in the national interest, by

The Iron Age

Market Briefs

DO Symbols—Five new DO symbols have been approved by Defense Production Administration. They are: B-5, suffix to DO ratings A, B, C, E, and Z-2 as described in Amend. 3 to CMP Reg. 1; E-4, for Canadian Atomic Energy Program; W-6, MRO for iron and steel producers; W-9, General Industrial Equipment Bureau, National Production Authority; AS, surplus aluminum purchases from sources other than mill (NPA Order M-88).

Ore Prices—Brown iron ore produced in Missouri and Texas will become about 85¢ per ton higher, on an average, as a result of Office of Price Stabilization action this week. The agency is allowing producers to raise their ceilings by 2¢ per dry unit. Authority for the action is described in Amend. 1, Supplementary Reg. 41, Rev. 1 of General Ceiling Price Regulation. Effective date is Aug. 1. Amount of the increase is the same as that granted to Georgia producers in July 1951 and to producers in nine other southern states on Nov. 10, 1951.

Unhappy Locals—Local unions of Jones & Laughlin plants in Pittsburgh and Aliquippa are dissatisfied with the strike settlement. The locals returned to work under protest because they feel the wage increase should have been 16¢ an hr across the board. The settlement provides for 12½¢ an hr and ½¢ increase in the differential between job classes, which averages 3½¢.

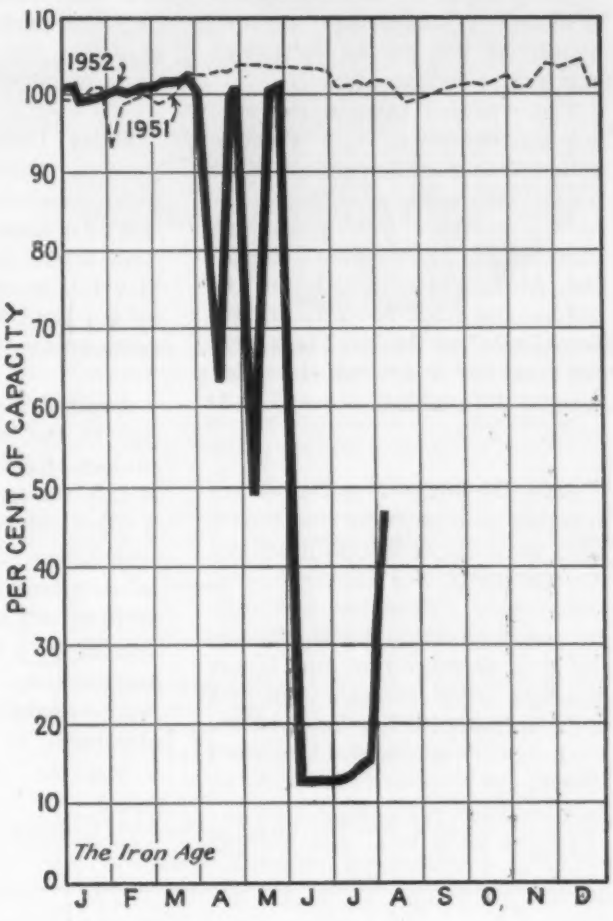
Aluminum Rod—Reynolds Metals Co. has started another expansion of its plant at Listerhill, Ala. Ground has been broken for a new $1.5 million merchant mill to roll aluminum rods and angles. It is scheduled to be completed Jan. 1, 1953. Foster and Creighton Co., Nashville, Tenn., is the contractor.

Price Boost Ok-d—Steel industry spokesmen and Office of Price Stabilization agreed this week on terms of a new price order permitting producers to defer or make adjustable billing on all shipments beginning at 12:01 a.m., July 26, thus allowing for an average increase of $5.20 per ton of carbon steel. OPS arrived at the tonnage boost by figuring 20 man hr for production of a ton of steel and computing the rise in man hr production costs at 26¢. An increase of about 4.7 pct would be applied to existing ceiling prices to determine new prices of alloy, specialty, and stainless products.

New Pipeline—Federal Power Commission has authorized Arkansas-Missouri Power Co. to build an additional 140 miles of natural gas pipeline to serve additional communities in Arkansas and Missouri. Hookups will be made with Texas Eastern Transmission Corp. at Campbell, Mo., and in Clay county, Ark. Estimated cost of project is $4 million.

Quick Comeback—Great Lakes Steel Corp. is pulling all stops to be one of the first producers back into full production. Shipments of steel were resumed July 27. First hot metal from a blast furnace was tapped at 4 a.m., July 29. First openhearth furnaces were tapped Monday evening, July 28. Spokesmen for the company weren't sure whether or not the company would be able to maintain continuous production of all departments. But they have a good chance of hitting peak output within a week. Union cooperation is credited with helping keep the firm's facilities well maintained during the strike. Some other firms reported as many as one-third of openhearth roofs had caved in.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
July 20	8.0	5.5	11.0	16.0	23.0	5.0	0.0	50.0	48.0*	3.5	37.0	73.5	14.0	15.5
July 27	44.0	35.0	40.0	49.0	60.0	55.0	30.0	78.0	68.0	37.5	55.0	82.0	44.0	47.0†

Beginning Jan. 1, 1952 operations are based on annual capacity of 108,587,870 net tons.
* Revised. † Tentative.

Alcoa Settles After Strike Threat

Given two days to settle or have nine plants closed . . . Contract similar to AFL agreement but will run only one year . . . Industry-OPS price talks under way—By *R. L. Hatschek.*

Yet another loaded-gun settlement was chalked up by labor early this week when Aluminum Co. of America settled with the United Steel Workers (CIO). Negotiations were first broken off by the union last Sunday and a strike ultimatum was presented. If Alcoa had not come to terms, nine of its plants would have been shut down Tuesday night. These included two smelters representing approximately 35 pct of the company's primary reduction capacity.

The weekend talks never even got to the union shop question before they were broken off. Main points of argument were the highly complex job evaluation question and geographic differential. Alcoa was willing to cut the differential from 7¢ to 5¢—in the recent steel settlement these were cut from 10¢ to 5¢—but the union wanted differentials reduced to 2¢ or 3¢.

Settle Monday—Negotiators got together Monday, with less than 2 days until the strike deadline, and an agreement was hammered out. Geographic differential was compromised at 4¢ and the workers got a 21.4¢ wage rise plus fringe package. New contract will run until July 31, 1952, a far cry from the 5-year agreement between Aluminum Workers Council (AFL) and the same company.

Of the 21.4¢ total, the workers will get a 10 pct wage boost (about 15¢ per hr) retroactive to Mar. 10 and a 4¢ hike retroactive to July 1 as in the AFL contract. Increases in shift differentials, vacations, insurance and hospitalization make up the rest of the package. Geographic differential is to be cut 2¢ more on Jan. 1. A modified union shop, similar to the one in the steel contract, was granted, and both parties agreed to a joint study on job evaluation which is to be completed by next July 1.

Strike Unthinkable — Office of Defense Mobilization had been quite concerned about the situation. An aluminum strike at this time would have been a killing blow to a market just regaining its balance and would have hurt defense production immeasurably.

Await Price Word — Intimately tied to the whole picture is the subject of prices. Alcoa, Reynolds Metals Co. and Kaiser Aluminum & Chemical Corp. met on Monday with Office of Price Stabilization in an attempt to thrash out this problem. Alcoa and Reynolds have applied for a 2¢-per-lb hike on pig aluminum and a 10 pct boost for ingot, semi-finished and finished aluminum, while Kaiser asked for a straight 12.5 pct across the board.

In a brief sketch of increased costs not including the propos wage hikes, Reynolds cited the increases between 1939 and 19 Raw materials, 61 pct highe wages, not including fringes, 1 pct higher; wages, includi fringes, 150.3 pct higher; a freight, 80 pct higher. Increas taxes, of course, need hardly mentioned.

Waited Steel Settlement — previously noted, Kaiser has ready settled with the USW a Alcoa with the Aluminum Wor ers. Reynolds contract with t USW did not expire until Apr. 1 and then both parties agreed wait out the steel dickering. The are now holding discussions settlement.

Markets Firmer—Generally th nonferrous metal markets, bein dependent to some extent on stee are a bit stronger this week Resumption of steel productio means there will now be sheets fo galvanizing and tinplating, an new autos which need batteries

Reconstruction Finance Corp sales of tin were higher last week and expected to rise further. Bat tery manufacturers were less hesi tant to place orders for lead. The feeling in the zinc trade that prices might dip some more ha faded. In the case of zinc, though stocks are quite sizeable and th new "firmness" will be limited to mental attitude and little else.

Curbs Removed — Specific re strictions on the grade and weight of aluminum to be used for stee deoxidizing or alloying and othe destructive purposes have been lift ed by amendment of National Pro duction Authority's M-84. Users for destructive purposes are stil governed by the provision that n better grade nor greater quantity than necessary is to be used.

NPA also amended Reg. 1, kill ing inventory restrictions on anti mony, bismuth, boron, cadmium calcium, tin, zinc, silicon and al types of nonferrous scrap.

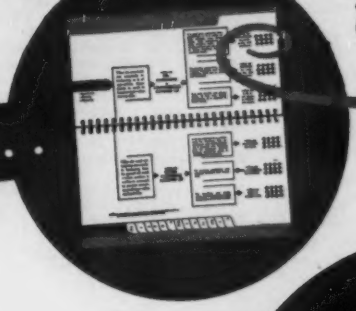
NONFERROUS METAL PRICES

	July 23	July 24	July 25	July 26	July 28	July 29
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered ...	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.215	$1.215	$1.215	.....	$1.215	$1.215
Zinc, East St. Louis	15.00	15.00	15.00	15.00	15.00	15.00
Lead, St. Louis	15.80	15.80	15.80	15.80	15.80	15.80

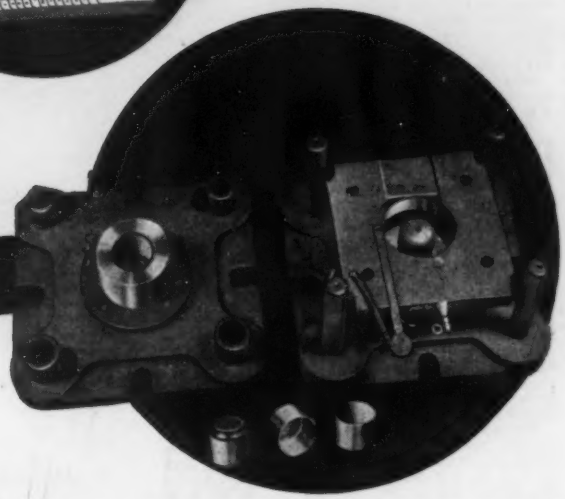
Note: Quotations are going prices.

How ONE TOOLMAKER . . .

USED THIS GUIDE . . . . . —then use HAMPDEN (Oil-Wear) or No. 610 (Air-Wear)



TO HOLD DOWN UNIT COSTS . . .



AT which step in your tooling process would you welcome real help in reducing tool and die costs? Tool Steel Selection? Heat Treating?—or on-the-job "Trouble-Shooting"? Here's how you, like the maker of the Dies shown here, can start to reduce costs with a Method that helps you at *all 3* steps.

First, to simplify selection, use the handy Selector Section in the Carpenter Matched Tool Steel Manual. Quickly and surely, it enables you to put your finger on the proper steel for best results. Next, to further insure tool and die performance, use the Manual's complete heat treating instructions—they have been simplified beyond anything previously known. It's easy to get started—use the Carpenter Matched Set Method to help you "trouble-shoot" your present tool and die jobs.

For better, lower-cost tooling, put this practical, easy-to-use Method to work, now. Ask for the 189-page Carpenter Matched Tool Steel Manual—just see your Carpenter representative. The Carpenter Steel Company, 121 W. Bern Street, Reading, Pa.

Job:
Compound Blank and Draw Die for forming .031", ¼-hard brass Vent Valve Bodies at the rate of 103 per minute on a punch press.

Problem:
Unit costs were on the upswing because the old dies wore too rapidly, causing frequent and costly machine shutdowns for regrinding.

Solution:
Looking for a die steel with maximum wear resistance, the toolmaker referred to the Selector Section in the Carpenter Matched Tool Steel Manual, and quickly arrived at Carpenter *Hampden* (Oil-Wear).

Heat Treatment:
Simplified instructions in the Manual were followed.

Results:
2 hours of costly machine downtime were eliminated *each day*—production per grind *rose over 300%!* As a matter of interest, the toolmaker takes off approximately .0005" per stoning and gets about 100 grinds from the Blank and Draw Die.

IMMEDIATE DELIVERY FROM LOCAL STOCKS!

Call Your Nearest Carpenter Warehouse or Distributor

DON'T WAIT... COOPERATE! The U.S. Needs Your Steel Scrap, Now

Carpenter

MATCHED TOOL & DIE STEELS

Export Department: Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

For your convenience, Carpenter carries warehouse stocks in principal cities throughout the country

Nonferrous Prices

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 30.1¢; 4S, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 75S-O, 75S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 34.1¢; 75S-O, 75S-OAL, 41.8¢; 0.032 in., 2S, 3S, 32.9¢; 4S, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.

Plate ¼ in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.8¢.

Extruded Solid Shapes: shape factors 1 to 5, 36.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 26, 39.6¢ to $1.16; 36 to 38, 47.2¢ to $1.70.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 33.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5¢ to 35¢.

Screw Machine Stock: Rounds, 11S-T3, ⅛ to 11/32 in., 53.5¢ to 42¢; ⅜ to 1½ in., 41.5¢ to 39¢; 1 9/16 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 39.5¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 42¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 75S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 63S-ST-5, OD in in.: 1¼ to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., $1.42; 96 in., $1.522; 120 in., $1.902; 144 in., $2.284. Gage, 0.24 x 28 in., 72 in., $1.379; 96 in., $1.839; 120 in., $2.299; 144 in., $2.759. **Coiled Sheet:** 0.019 in. x 28 in., 28.2¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 63¢; 3/16 in., 65¢; ⅛ in., 67¢; B & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 57.5¢; 1¼ to 1.749 in., 53¢; 2½ to 5 in., 48.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057; ¼ in. to 5/16, $1.40; 5/16 to ⅜, $1.26; ½ to ⅝, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, ⅝ to ¾, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60½
Strip, cold-rolled	83	63½
Rods and bars	73	58½
Angles, hot-rolled	73	58½
Plates	75	59½
Seamless tubes	106	93½
Shot and blocks	..	53½

Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	45.52	....	45.12
Copper, h-r	....	41.37	....
Copper, drawn	....	42.62	....
Low brass	42.34	42.03	....
Yellow brass	40.17	39.86	....
Red brass	43.10	42.79	....
Naval brass	44.72	38.78	40.04
Leaded brass	....	....	38.02
Com'l bronze	44.39	44.08	....
Mang. bronze	48.44	42.83	43.89
Phos. bronze	64.72	64.97	....
Muntz metal	42.69	38.25	39.50
Ni silver, 10 pct	51.96	54.18	....

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	19.00
Aluminum pig	18.00
Antimony, American, Laredo, Tex.	39.00
Berrylium copper, 3.75-4.25% Be	$1.56
Beryllium aluminum 5% Be, Dollars per lb contained Be	$69.50
Bismuth, ton lots	$2.35
Cadmium, del'd	$2.25
Cobalt, 97-99% (per lb)	$2.40 to $2.47
Copper, electro, Conn. Valley	24.50
Copper, Lake, delivered	24.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$200
Lead, St. Louis	15.80
Lead, New York	16.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb.	24.50
Magnesium, sticks, 100 to 500 lb.	42.00 to 44.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$188 to $191
Nickel electro, f.o.b. N. Y. warehouse	59.58
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	52.75
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$90 to $93
Silver, New York, cents per oz.	83.25
Tin, New York	$1.216
Titanium, sponge	$5.00
Zinc, East St. Louis	15.00
Zinc, New York	15.83
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	27.25
No. 120	26.75
No. 123	26.25
80-10-10 ingot	
No. 305	33.00
No. 315	30.50
88-10-2 ingot	
No. 210	41.50
No. 215	40.00
No. 245	34.50
Yellow ingot	
No. 405	23.25
Manganese bronze	
No. 421	30.50

Aluminum Ingot

(Cents per lb, 10,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	20.6
0.60 copper, max.	20.4
Piston alloys (No. 122 type)	19.5
No. 12 alum. (No. 2 grade)	18.5
108 alloy	19.6
195 alloy	20.8
13 alloy (0.60 copper max.)	20.8
ASX-679	19.5
Steel deoxidizing aluminum, notch-bar granulated or shot	
Grade 1—95-97½%	18.80
Grade 2—92-95%	18.60
Grade 3—90-92%	18.40
Grade 4—85-90%	18.20

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	37.84
Electrodeposited	33¾
Flat rolled	38.34
Forged ball anodes	43
Brass, 80-20	
Cast, oval, 15 in. or longer	34¾
Zinc, oval	26½
Ball, anodes	25½
Nickel, 99 pct plus	
Cast	76.00
Rolled, depolarized	77.00
Cadmium	$2.40
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	97½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	20½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz.	67¼
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add ¼¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21½	20½
Yellow brass	19½	17½
Red brass	20½	19½
Comm. bronze	20½	19½
Mang. bronze	18½	17½
Brass rod ends	18½	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.5
No. 2 copper wire	17.5
Light copper	16.5
Refinery brass	16.5
Radiators	17.5*
* Dry copper content.	14.5

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.5
No. 2 copper wire	17.5
Light copper	16.5
No. 1 composition	18.5
No. 1 comp. turnings	18.5
Rolled brass	15.5
Brass pipe	16.5
Radiators	14.5

Aluminum

Mixed old cast	9 — 9½
Mixed new clips	10 — 11
Mixed turnings, dry	9 — 9½
Pots and pans	8½ — 9

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	18¾ — 19¼
No. 2 heavy copper and wire	17 — 17½
Light copper	15½ — 16
New type shell cuttings	15½ — 16
Auto radiators (unsweated)	14 — 14¼
No. 1 composition	17½ — 18
No. 1 composition turnings	17 — 17½
Unlined red car boxes	16½ — 17
Cocks and faucets	15 — 15½
Mixed heavy yellow brass	11½ — 12
Old rolled brass	14½ — 15
Brass pipe	15½ — 16
New soft brass clippings	16 — 16½
Brass rod ends	15½ — 16
No. 1 brass rod turnings	15 — 15½

Aluminum

Alum. pistons and struts	6 — 6½
Aluminum crankcases	7 — 7½
2S aluminum clippings	10
Old sheet and utensils	7 — 7½
Borings and turnings	6 — 6
Misc. cast aluminum	7 — 7½
Dural clips (24S)	7 — 7½

Zinc

New zinc clippings	6
Old zinc	4
Zinc routings	3 — 3½
Old die cast scrap	5 — 5½

Nickel and Monel

Pure nickel clippings	35 — 36
Clean nickel turnings	35 — 36
Nickel anodes	35 — 36
Nickel rod ends	35 — 36
New Monel clippings	28 — 29
Clean Monel turnings	20 — 21
Old sheet Monel	28 — 29
Nickel silver clippings, mixed	13 — 14
Nickel silver turnings, mixed	12 — 13

Lead

Soft scrap, lead	12 — 12¼
Battery plates (dry)	7 — 7½
Batteries, acid free	4 — 5

Magnesium

Segregated solids	15 — 16
Castings	14 — 15

Miscellaneous

Block tin	100 — 110
No. 1 pewter	70
No. 1 auto babbitt	55 — 60
Mixed common babbitt	14½ — 14¾
Solder joints	19 — 20
Siphon tops	60
Small foundry type	19 — 19½
Monotype	15½ — 16
Lino. and stereotype	13½ — 14
Electrotype	13 — 13½
Hand picked type shells	9¾ — 10
Lino. and stereo. dross	7
Electro. dross	6¼

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The Iron Age

Ceilings Return As Strike Ends

Price rise follows end of steel dispute . . . No. 1 grades first to climb . . . Others expected to follow more slowly . . . Some mills resisting increases . . . Jalopy order changed.

Reports of a rising scrap market came hard on the heels of the end of the steel strike. Mills, not yet in full production, were reluctant early in the week to pay ceiling prices. But dealers generally were holding out for top prices, particularly in No. 1 grades. It may be a little while before No. 2 grades reach their maximum, but most in the trade feel that time is not too far off.

In the meantime, movement was slow pending agreement on the pricing hassle. Blast furnace grades had not yet reflected the rise in most areas, but dealers expect a firming as a winter ore shortage looms. Cast was firming slowly for the same reasons.

Unprepared scrap, Grade 35, is the new designation for wrecked autos, busses, trucks, trailers, and other vehicles sold prior to demolition, which on Aug. 2 will be priced under Ceiling Price Reg. 5, as amended.

Basing point ceiling price for this grade is $12 under the No. 1 base grade ceiling price.

Amend. 9, CPR 5, also provides a dealer-to-dealer differential of $2.50 per ton covering collection of unprepared scrap. Previous allowance was only $1 per ton.

Pittsburgh — Despite high inventories of consumers, the market was strong. Strength was based on two things: (1) A forthcoming slump in supply of production scrap, and (2) belief that lack of iron ore will force heavier reliance on scrap. Openhearth grades were back up to ceiling prices on appraisal. Cast was stronger.

Chicago — An optimism had crept into the market here this week, bringing better prices in most scrap grades, although some of the cast grades of scrap were still in the doldrums. Orders were out for steelmaking, blast furnace, and electric furnace grades at ceiling prices and large yards were not reluctant to accept cast if the price was not too high. Collections of industrial scrap were still down, though agricultural was continuing to flow fairly well.

Philadelphia—With the steel strike over, optimism pervades the scrap trade here—but nobody seems to know what's going on. Market is a hodgepodge with some mills refusing to buy until they clear up the scrap they have on tracks or stored. Others are reported to have come in for No. 1 grades at ceiling. Things are expected to settle down in about a week. Cast grades are firmer and prices are up.

Detroit—Market here seemed to be firming with growing optimism extending into cast grades of scrap as well as the steelmaking scrap types. A dwindling supply of industrial scrap was beginning to pinch somewhat. Although no upward trend had been noted in cast grades, dealers were no longer quite so willing to rid their yards of cast scrap. General feeling is that the market will enter an uptrend in all grades in the near future. Reports were received of some upgrading.

Cleveland — Market on openhearth grades bounced back to ceiling prices in Cleveland and the Valley this week on the basis of mill buying. Purchase of Grades 1 to 5 by one Valley mill last week plus adjustment of former orders to ceilings by another left no doubt the market has regained its strength. Springboards in the Valley are $4.00. In Cleveland one major consumer fully expects to pay ceiling prices and springboards on all grades of scrap. This consumer was expected to come in early this week. As yet this strength has not been passed wholly on to blast furnace grades but market is stronger.

St. Louis—Settlement of the steel strike brought new strength to the market and a return to ceiling prices. Only change in cast grades is unstripped motor blocks, up $5 to $40. Mill buying has been negligible because of unfilled orders and jammed unloading facilities. It will probably take a week or two to straighten things out. It is expected that rerolling rails and axles will go back on allocation.

Birmingham — Some heavy melting scrap is moving from the Carolinas to mills still operating at ceiling prices f.o.b. but brokers today were unable to contact purchasing agents of reopening companies to learn their needs. Cast market is very strong and offers cover a wide range, which makes it impossible to establish a price on No 1 cast and stove plate. Brokers and dealers expect heavy melting prices to remain at ceilings for some time and cast prices to climb back toward ceilings. For the most part dealers' supplies are not too high.

Cincinnati — The chain reaction of bullishness has also had its effect on the Cincinnati market. One major consumer in the district claims it will make purchases of August requirements at full ceiling on all grades. Question resolves itself into not whether to pay ceiling but how much of a springboard is needed to bring in the scrap. Sharp drop in production scrap is resulting in greater demand for dealer material. Cast also is reacting sympathetically to the increase in strength of steelmaking grades.

West Coast—Post-strike scrap policies of steel producers were not announced last week but some drops were expected, principally on No. 1 and 2 heavy melting. Although cast was fairly lively in Los Angeles, volume in Seattle was about half normal. About 25 pct of the scrapyard workers have been laid off in the Seattle area and dealer buying is at a low ebb.

Boston—For the first time since No. 1 grades dipped under ceiling, there have been some sales at the top price. But most business is still on orders below ceiling. There is only a trickle of activity this week.

Buffalo—With approximately 100,000 tons of scrap stored in dealers' yards, along the water front, in railroad cars and in mills' yards, dealers expect a one to three week embargo on shipments to mills. About 3000 cars have accumulated in the area. No buying interest is reported yet and prices are unchanged.

Scrap Prices

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

*Scrap at basing point ceiling. Broker's fee not included.

†Scrap at shipping point ceiling. Broker's fee not included.

Pittsburgh

No. 1 hvy. melting	....	$43.00*
No. 2 hvy. melting	....	43.00*
No. 1 bundles	....	44.00*
No. 2 bundles	....	43.00*
Machine shop turn.	$29.00 to	30.00
Mixed bor. and ms. turns.	29.00 to	30.00
Shoveling turnings	33.00 to	34.00
Cast iron borings	32.00 to	33.00
Low phos. punch'gs, plate	....	46.50*
Heavy turnings	35.00 to	36.00
No. 1 RR. hvy. melting	....	46.00*
Scrap rails, random lgth.	....	48.00*
Rails 2 ft and under	....	52.00*
RR. steel wheels	....	51.00*
RR. spring steel	....	51.00*
RR. couplers and knuckles	....	51.00*
No. 1 machinery cast	....	52.00
Cupola cast	46.00 to	46.50
Heavy breakable cast.	....	45.00
Malleable	....	55.00

Chicago

No. 1 hvy. melting	$41.00 to	$42.00
No. 2 hvy. melting	40.00 to	41.00
No. 1 factory bundles	41.00 to	42.00
No. 1 dealers' bundles	41.00 to	42.00
No. 2 dealers' bundles	36.00 to	37.00
Machine shop turn.	31.00 to	32.50
Mixed bor. and turn.	35.50 to	36.50
Shoveling turnings	35.50 to	36.50
Cast iron borings	35.50 to	36.50
Low phos. forge crops	50.00 to	51.00
Low phos. punch'gs, plate	....	45.00*
Low phos. 3 ft and under	44.00 to	45.50
No. 1 RR. hvy. melting	....	44.50*
Scrap rails, random lgth.	....	46.50*
Rerolling rails	....	51.50*
Rails 2 ft and under	....	50.50*
Locomotive tires, cut	....	49.50*
Cut bolsters & side frames	....	47.50*
Angles and splice bars	....	49.50*
RR. steel car axles	....	56.50*
RR. couplers and knuckles	....	49.50*
No. 1 machinery cast	44.00 to	45.00
Cupola cast	42.00 to	43.00
Heavy breakable cast.	35.00 to	37.00
Cast iron brake shoes	....	41.00†
Cast iron car wheels	....	47.00†
Malleable	50.00 to	51.00
Stove plate	40.00 to	41.00

Philadelphia

No. 1 hvy. melting	$40.00 to	$41.50*
No. 2 hvy. melting	38.00 to	39.00
No. 1 bundles	40.00 to	42.50*
No. 2 bundles	38.00 to	39.00
Machine shop turn.	29.00 to	30.00
Mixed bor. and turn.	31.00 to	32.00
Shoveling turnings	33.50 to	34.50
Clean cast chem. borings	34.00 to	34.50
Low phos. punch'gs, plate	....	45.00*
Low phos. 3 ft and under	....	45.50*
Low phos. bundles	....	44.50*
Hvy. trimmings	....	41.50*
RR. steel wheels	....	49.50*
RR. spring steel	....	49.50*
Rails 18 in. and under	....	52.50*
Cupola cast	41.00 to	42.00
Heavy breakable cast.	40.00 to	41.00
Cast iron carwheels	....	47.00†
Malleable	....	55.00†
Unstripped motor blocks	34.00 to	35.00
Drop broken mach'y cast.	48.00 to	49.00
Charging box cast.	39.00 to	40.00

Cleveland

No. 1 hvy. melting	....	$42.00*
No. 2 hvy. melting	....	42.00*
No. 1 busheling	....	43.00
No. 1 bundles	....	43.00
No. 2 bundles	....	42.00*
Machine shop turn.	$27.00 to	28.00
Mixed bor. and turn.	31.00 to	32.00
Shoveling turnings	31.00 to	32.00
Cast iron borings	31.00 to	32.00
Low phos. 2 ft and under	....	48.00*
No. 1 RR. hvy. melting	....	45.00*
Rails 3 ft and under	....	50.00*
Rails 18 in. and under	....	53.00*
No. 1 machinery cast	48.50 to	49.50
Cast iron carwheels	....	47.00†
Stove plate	45.00 to	46.00
Malleable	51.00 to	52.00

Youngstown

No. 1 hvy. melting	....	$43.00*
No. 2 hvy. melting	....	43.00*
No. 1 bundles	....	44.00*
No. 2 bundles	....	43.00*
Machine shop turn.	$28.00 to	29.00
Shoveling turnings	32.00 to	33.00
Cast iron borings	32.00 to	33.00
Low phos. plate	....	46.50*

Buffalo

No. 1 hvy. melting	$37.00 to	$38.00
No. 2 hvy. melting	37.00 to	38.00
No. 1 bushelings	38.00 to	39.00
No. 1 bundles	38.00 to	39.00
No. 2 bundles	37.00 to	38.00
Machine shop turn.	28.00 to	29.00
Mixed bor. and turn.	32.00 to	33.00
Shoveling turnings	32.00 to	33.00
Cast iron borings	32.00 to	33.00
Low phos. plate	....	45.50*
Scrap rails, random lgth.	....	47.00*
Rails 2 ft and under	....	51.00*
RR. steel wheels	....	50.00*
RR. spring steel	....	50.00*
RR. couplers and knuckles	....	50.00*
No. 1 machinery cast	....	45.00†
No. 1 cupola cast	40.00 to	41.00
Small indus. malleable	....	55.00†

Birmingham

No. 1 hvy. melting	....	$38.00*
No. 2 hvy. melting	....	38.00*
No. 1 bundles	....	39.00*
Electric furnace bundles	....	41.00*
No. 2 bundles	....	38.00*
No. 1 busheling	....	39.00*
Machine shop turn.	....	29.00*
Shoveling turnings	....	33.00*
Cast iron borings	....	33.00*
Bar crops and plate	....	44.00*
Structural and plate, 2 ft.	....	44.00*
No. 1 RR. hvy. melting	....	41.00*
Scrap rails, random lgth.	....	43.00*
Rerolling rails	....	48.00*
Rails 2 ft and under	....	47.00*
Angles & splice bars	....	46.00*
Std. steel axles	....	53.00*
No. 1 cupola cast	44.00 to	45.00
Stove plate	40.00 to	41.00
Cast iron carwheels	....	47.00†
Charging box cast	39.00 to	40.00
Heavy breakable	36.00 to	37.00
Drop broken machinery	42.00 to	43.00
Unstripped motor blocks	35.00 to	36.00

St. Louis

No. 1 hvy. melting	....	$40.00*
No. 2 hvy. melting	....	40.00*
No. 2 bundled sheets	....	40.00*
Machine shop turn.	....	26.00
Shoveling turnings	....	28.00
Rails, random lengths	....	45.00*
Rails 3 ft and under	....	50.00
Locomotive tires, uncut	....	48.00
Angles and splice bars	....	48.00*
Std. steel car axles	....	55.00*
RR. spring steel	....	48.00*
Cupola cast	....	40.00
Hvy. breakable cast.	....	38.00
Cast iron brake shoes	....	38.00
Stove plate	....	42.00
Cast iron car wheels	45.00 to	46.00
Malleable	45.00 to	50.00
Unstripped motor blocks	....	40.00

New York

Brokers' Buying prices per gross ton, on cars:

No. 1 hvy. melting	$33.00 to	$34.00
No. 2 hvy. melting	31.50 to	32.50
No. 2 bundles	31.50 to	32.50
Machine shop turn.	22.00 to	22.50
Mixed bor. and turn.	24.00 to	24.50
Shoveling turnings	24.00 to	24.50
Clean cast chem. borings	30.00 to	30.50
No. 1 machinery cast	42.00 to	43.00
Mixed yard cast.	33.00 to	35.00
Charging box cast.	36.00 to	38.00
Heavy breakable cast.	33.00 to	35.00
Unstrp. motor blocks	29.00 to	30.00

Boston

Brokers' Buying prices per gross ton, on cars:

No. 1 hvy. melting	$31.00 to	$33.17*
No. 2 hvy. melting	31.00 to	32.00
No. 1 bundles	31.00 to	32.00
No. 2 bundles	31.00 to	32.00
No. 1 busheling	31.00 to	32.00
Machine shop turn.	19.00 to	20.00
Mixed bor. and turn.	19.00 to	20.00
Shoveling turnings	....	20.00
Clean cast chem. borings	24.00 to	26.00
Mixed cupola cast.	33.00 to	34.00
Heavy breakable cast.	30.00 to	31.00
Stove plate	30.00 to	31.00

Detroit

Brokers' Buying prices per gross ton, on cars:

No. 1 hvy. melting	....	$39.20*
No. 2 hvy. melting	$37.20 to	38.20
No. 1 bundles, openhearth	....	40.20*
No. 1 bundles, electric furnace	....	42.20*
New busheling	....	40.20*
Machine shop turn.	....	28.00
Mixed bor. and turn.	....	33.00
Shoveling turnings	....	33.00
Cast iron borings	....	33.00
Low phos. punch'gs, plate	....	42.70*
No. 1 cupola cast.	46.00 to	47.00
Heavy breakable cast.	40.00 to	42.00
Stove plate	....	41.00
Automotive cast.	....	47.00
Cast iron brake shoes	....	39.00

Cincinnati

No. 1 hvy. melting	$40.50 to	$41.00
No. 2 hvy. melting	39.00 to	41.00
No. 1 bundles	40.50 to	41.00
No. 2 bundles	40.50 to	41.00
Machine shop turn.	28.50 to	29.50
Mixed bor. and turn.	33.50 to	34.50
Shoveling turnings	33.50 to	34.50
Cast iron borings	33.50 to	34.50
Low phos. plate	....	45.50*
Low phos. 2 ft and under	....	46.00*
Rails, random lengths	....	47.00*
Rails, 18 in. and under	....	53.00*
No. 1 cupola cast	46.00 to	47.00
Hvy. breakable cast.	39.00 to	40.00
Drop broken cast.	49.00 to	50.00

San Francisco

No. 1 hvy. melting	....	$34.00*
No. 2 hvy. melting	....	34.00*
No. 1 bundles	....	35.00*
No. 2 bundles	....	29.00
Machine shop turn.	....	20.00
Elec. fur. 1 ft and under	....	41.00*
No. 1 RR. hvy. melting	....	37.00*
Scrap rails random lgth.	....	39.00*
No. 1 cupola cast	....	42.00

Los Angeles

No. 1 hvy. melting	....	$34.00*
No. 2 hvy. melting	....	34.00*
No. 1 bundles	....	35.00*
No. 2 bundles	....	29.00
Mach. shop turn.	....	20.00
Elec. fur. 1 ft and under	....	41.00*
No. 1 RR. hvy. melting	....	37.00*
Scrap rails, random lgth.	....	39.00*
No. 1 cupola cast	....	45.00

Seattle

No. 1 hvy. melting	....	$34.00*
No. 2 hvy. melting	....	34.00*
No. 1 bundles	....	35.00*
No. 2 bundles	....	29.00
Elec. fur. 1 ft and under	....	41.00*
No. 1 RR. hvy. melting	....	37.00*
No. 1 cupola cast	....	36.50
Heavy breakable	....	32.00

Hamilton, Ont.

No. 1 hvy. melting	....	$35.00
No. 1 bundles	....	35.00
No. 2 bundles	....	34.50
Mechanical bundles	....	33.00
Mixed steel scrap	....	31.00
Mixed bor. and turn.	....	32.00
Rails, remelting	....	35.00
Rails, rerolling	....	32.00
Bushelings	....	30.00
Bush., new fact. prep'd.	....	33.00
Bush., new fact. unprep'd.	....	32.00
Short steel turnings	....	32.00
Cast scrap	....	30.00

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	July 29, 1952	July 22, 1952	July 1, 1952	July 31, 1951
Hot-rolled sheets	3.60	3.60	3.60	3.60
Cold-rolled sheets	4.35	4.35	4.35	4.35
Galvanized sheets (10 ga)	4.80	4.80	4.80	4.80
Hot-rolled strip	3.50	3.50	3.50	3.50
Cold-rolled strip	4.75	4.75	4.75	4.75
Plate	3.70	3.70	3.70	3.70
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	36.75	36.75	36.75	36.75
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb.) cokes	$8.70	$8.70	$8.70	$8.70
Tinplate, electro (0.50 lb.)	7.40	7.40	7.40	7.40
Special coated mfg. ternes	7.50	7.50	7.50	7.50
Bars and Shapes: (cents per pound)				
Merchant bars	3.70	3.70	3.70	3.70
Cold finished bars	4.55	4.55	4.55	4.55
Alloy bars	4.30	4.30	4.30	4.30
Structural shapes	3.65	3.65	3.65	3.65
Stainless bars (No. 302)	31.50	31.50	31.50	31.50
Wrought iron bars	9.50	9.50	9.50	9.50
Wire (cents per pound)				
Bright wire	4.85	4.85	4.85	4.85
Rails (dollars per 100 lb)				
Heavy rails	$3.60	$3.60	$3.60	$3.60
Light rails	4.00	4.00	4.00	4.00
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$56.00	$56.00	$56.00	$56.00
Slabs, rerolling	56.00	56.00	56.00	56.00
Forging billets	66.00	66.00	66.00	66.00
Alloy blooms, billets, slabs	70.00	70.00	70.00	70.00
Wire Rod and Skelp: (cents per pound)				
Wire rods	4.10	4.10	4.10	4.10
Skelp	3.35	3.35	3.35	3.35

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	July 29, 1952	July 22, 1952	July 1, 1952	July 31, 1951
Foundry, del'd Phila.	$58.19	$58.19	$58.19	$57.77
Foundry, Valley	52.50	52.50	52.50	52.50
Foundry, Southern, Cin'ti	55.58	55.58	55.58	55.58
Foundry, Birmingham	48.88	48.88	48.88	48.88
Foundry, Chicago†	52.50	52.50	52.50	52.50
Basic, del'd Philadelphia	57.27	57.27	57.27	56.92
Basic, Valley furnace	52.00	52.00	52.00	52.00
Malleable, Chicago†	52.50	52.50	52.50	52.50
Malleable, Valley	52.50	52.50	52.50	52.50
Charcoal, Chicago	70.56	70.56	70.56	70.56
Ferromanganese‡	186.25	186.25	186.25	186.25

†The switching charges for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy pages.

Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.00*	$41.75	$38.50	$44.00*
No. 1 steel, Phila. area	40.75	40.50	40.50	42.50*
No. 1 steel, Chicago	41.50	40.00	38.50	42.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.15*
Low phos. Young'n	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	46.25	42.00	42.00	49.00†
No. 1 cast, Philadelphia	41.50	39.50	38.50	49.00†
No. 1 cast, Chicago	42.50	39.50	40.50	49.00†

*Basing pt., not including broker's fee.
†Shipping pt., not including broker's fee.

Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75	$14.75	$14.75	$14.75
Foundry coke, prompt	17.75	17.75	17.75	17.75

Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.215	$1.215	$1.215	$1.06
Zinc, East St. Louis	15.00	15.00	15.00	17.50
Lead, St. Louis	15.80	15.80	15.80	16.80
Aluminum, virgin	19.00	19.00	19.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	59.58
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	39.00	39.00	39.00	42.00

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

	Finished Steel Base Price	Pig Iron	Scrap Steel
July 29, 1952	4.131¢ per lb.	$52.77 per gross ton	$41.75 per gross ton
One week ago	4.131¢ per lb.	52.77 per gross ton	40.75 per gross ton
One month ago	4.131¢ per lb.	52.77 per gross ton	39.17 per gross ton
One year ago	4.131¢ per lb.	52.69 per gross ton	43.00 per gross ton

	Finished Steel Base Price High	Finished Steel Base Price Low	Pig Iron High	Pig Iron Low	Scrap Steel High	Scrap Steel Low
1952	4.131¢ Jan. 1	4.131¢ Jan. 1	$52.77 May 2	$52.72 Jan. 1	$42.00 Jan. 1	$39.17 July 1
1951	4.131¢ Jan. 2	4.131¢ Jan. 2	52.72 Oct. 9	52.69 Jan. 2	47.75 Jan. 30	42.00 Oct. 23
1950	4.131¢ Dec. 1	3.837¢ Jan. 3	52.69 Dec. 12	45.88 Jan. 3	45.13 Dec. 19	26.25 Jan. 3
1949	3.837¢ Dec. 27	3.705¢ May 3	46.87 Jan. 18	45.88 Sept. 6	43.00 Jan. 4	19.33 June 28
1948	3.721¢ July 27	3.193¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947	3.193¢ July 29	2.848¢ Jan. 1	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.848¢ Dec. 31	2.464¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.464¢ May 29	2.396¢ Jan. 1	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.396¢	2.396¢	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.396¢	2.396¢	23.61	23.61	$19.17	$19.17
1942	2.396¢	2.396¢	23.61	23.61	19.17	19.17
1941	2.396¢	2.396¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$18.92 May 22
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.27207¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	32.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL-ING	SHAPES STRUCTURALS		STRIP			
		Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Steel Sheet	Carbon	Hi Str. Low Alloy	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem, Pa.					$70.00 *B3*			3.70 *B3*	5.50 *B3*				
	Buffalo, N. Y.			$56.00 *B3*	$66.00 *B3, R3*	$70.00 *B3, R3*		4.45 *B3*	3.70 *B3*	5.50 *B3*	3.50 *B3, R3*	4.65 *B3*	4.95 *B3*	6.40 *B3*
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.				$73.00 *A2*	$77.00 *A2*					3.90 *A2*		5.55 *A2*	
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.			$56.00 *B3*	$66.00 *B3*	$70.00 *B3*			3.70 *B3*	5.50 *B3*	3.50 *B3*			
	Newark, N. J.													
	New Haven, Conn.											5.15 *A5* 5.85 *D1*		
	Phoenixville, Pa.								5.90 *P2*					
	Putnam, Conn.													
	Sparrows Pt., Md.										3.50 *B3*	4.65 *B3*	4.95 *A5, B3*	6.40 *B3*
	Worcester, Mass.													
	Trenton, N. J.											6.00 *R4*		
MIDDLE WEST	Alton, Ill.										3.95 *L1*			
	Ashland, Ky.										3.50 *A7*			
	Canton-Massillon, Ohio				$66.00 *R3*	$70.00 *R3* $66.00 *T5*								
	Chicago, Ill.			$56.00 *U1*	$66.00 *U1, R3,W8*	$70.00 *U1, R3,W8*		4.45 *U1*	3.65 *U1, W8*	5.50 *U1*	3.50 *A1, W8*	4.90 *A1, I3*		
	Cleveland, Ohio				$66.00 *R3*							4.65 *A5, J3*		6.55 *A5* 6.70 *J3*
	Detroit, Mich.		$54.00 *R5*		$69.00 *R5*	$73.00 *R5*					4.40 *M2* 3.80 *G3*	4.85 *G3* 5.45 *M2* 5.60 *R5, D1, D2*	5.95 *G3*	
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana			$56.00 *U1*	$66.00 *U1*	$70.00 *U1, Y1*		4.45 *I3*	3.65 *U1, I3*	5.50 *U1, I3* 6.00 *Y1*	3.50 *U1, Y1, I3*	4.90 *I3*	5.30 *U1, I3* 5.80 *Y1*	
	Granite City, Ill.													
	Kokomo, Ind.													
	Middletown Ohio											4.65 *A7*		
	Niles, Ohio Sharon, Pa.										4.00 *S1*	5.35 *S1*	5.40 *S1*	6.55 *S1*
	Pittsburgh, Pa.	$52.00 *U1*	$54.00 *U1, C11*	$56.00 *U1*	$66.00 *U1*	$70.00 *U1, C11*	3.35 *U1* 3.45 *J3*	4.45 *U1*	3.65 *U1, J3*	5.50 *U1, J3*	4.00 *S9,S7* 3.75 *A3* 3.50 *J3,A7*	4.65 *J3,A7* 5.00 *A3* 5.35 *B4,S7*		
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.								3.90 *W3*		3.60 *W3*	4.65 *W3,F3*	5.75 *W3*	7.20 *W3*
	Youngstown, Ohio					$70.00 *Y1, C10*	3.35 *U1, R3*			6.00 *Y1*	3.50 *U1, R3, Y1*	4.65 *R3, Y1* 5.25 *C5,T4* 5.35 *B4*	5.30 *U1, R3* 5.80 *Y1*	6.55 *R3* 7.05 *Y1*
WEST	Fontana, Cal.	$79.00 *K1*	$80.00 *K1*	$75.00 *K1*	$85.00 *K1*	$89.00 *K1*			4.25 *K1*	6.10 *K1*	4.75 *K1*	6.30 *K1*	6.20 *K1*	6.95 *K1*
	Geneva, Utah				$66.00 *C7*				3.65 *C7*	5.50 *C7*				
	Kansas City, Mo.								4.25 *S2*		4.10 *S2*			
	Los Angeles, Calif.				$85.00 *B2*	$90.00 *B2*			4.25 *B2, C7*	6.05 *B2*	4.25 *B2,C7*	6.40 *C1*	6.05 *B2*	
	Minnequa, Colo.								4.10 *C6*		4.55 *C6*			
	San Francisco, Cal. Niles, Cal.				$85.00 *B2*				4.20 *B2* 4.56 *P9*	6.00 *B2*	4.25 *C7,B2*		6.05 *B2*	
	Seattle, Wash.	$73.00 *S11*			$85.00 *B2*				4.30 *B2*	6.10 *B2*	4.50 *B2*		6.30 *B2*	
SOUTH	Atlanta, Ga.										4.05 *A8*			
	Birmingham, Ala. Alabama City, Ala.			$56.00 *T2*	$66.00 *T2*				3.65 *R3,T2*	5.50 *T2*	3.50 *R3,T2*		5.30 *T2*	
	Houston, Texas		$62.00 *S2*		$74.00 *S2*	$78.00 *S2*			4.05 *S2*		3.90 *S2*			

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL PRICES

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	
Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terne 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.		Coke* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.	
													Bethlehem, Pa.
3.60 *B3*	4.35 *B3*				5.40 *B3*	6.55 *B3*			4.10 *W6*				Buffalo, N. Y.
										† Special coated mfg ternes deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb, deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50-lb, add 25¢. ELECTRO: 0.50-lb, add 25¢; 0.75-lb, add 65¢.			Claymont, Del.
													Coatesville, Pa.
4.00 *A2*					5.65 *A2*								Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.10 *B3*				Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
													Putnam, Conn.
3.60 *B3*	4.35 *B3*	4.80 *B3*			5.40 *B3*	6.55 *B3*	6.75 *B3*		4.20 *B3*	$8.55 *B3*	$7.25 *B3*		Sparrows Pt., Md.
									4.40 *A5*				Worcester, Mass.
									4.20 *R4*				Trenton, N. J.
									4.40 *L1*				Alton, Ill.
3.60 *A7*		4.80 *A7*	4.65 *A7*										Ashland, Ky.
		4.80 *R3*											Canton-Massillon, Ohio
3.60*W8*					5.40 *U1*				4.10 *A5,R3, N4*				Chicago, Ill.
3.60 *R3,J3*	4.35 *R3,J3*		4.65 *R3*		5.40 *R3,J3*	6.55 *R3,J3*			4.10 *A5*				Cleveland, Ohio
3.80 *G3* 4.40 *M3*	4.55 *G3*				5.95 *G3*	7.10 *G3*							Detroit, Mich.
													Duluth, Minn.
3.60 *U1, Y1,I3*	4.35 *U1, Y1,I3*	4.80 *U1,I3*	4.65 *U1,I3*	5.20 *U1*	5.40 *U1,I3* 5.90 *Y1*	6.55 *U1,I3* 7.05 *Y1*		5.40 *I3*	4.10 *Y1*	$8.45 *I3, U1, Y1*	$7.15 *U1,I3*	5.85 *U1* 5.30 *Y1*	Gary, Ind. Harbor, Indiana
4.30 *G2*	5.05 *G2*	5.50 *G2*	5.35 *G2*								$7.35 *G2*	6.05 *G2*	Granite City, Ill.
		5.20 *C9*											Kokomo, Ind.
	4.35 *A7*		4.65 *A7*	5.20 *A7*									Middletown, Ohio
5.25 *N3* 4.00 *S1*		6.00 *N3*		6.00 *N3*	5.40 *S1*								Niles, Ohio Sharon, Pa.
3.60 *U1, J3,A7* 3.75 *A3*	4.35 *U1, J3,A7*	4.80 *U1*	4.65 *U1*		5.40 *U1,J3*	6.55 *U1,J3*	7.20 *U1*		4.10 *A5* 4.41 *P6*	$8.45 *U1,J3*	$7.15 *U1,J3*	5.85 *U1*	Pittsburgh, Pa.
									4.30 *P7*				Portsmouth, Ohio
3.60*W3,W5*	5.35 *F3* 4.35*W3,W5*	4.80*W3,W5*		5.20*W3,W5*	5.75 *W3*	6.90 *W3*				$8.45*W3,W5*	$7.15*W3,W5*	6.15 *W5* 5.85 *F3*	Weirton, Wheeling, Follansbee, W. Va.
3.60 *U1, R3, Y1*	4.35 *R3, Y1*	5.50 *R1*	4.65 *Y1*	6.05 *E2*	5.40 *U1,R3* 5.90 *Y1*	6.55 *R3* 7.05 *Y1*		6.05 *R1,E2*	4.10 *Y1*	$8.45 *R3*	$7.15 *R3*		Youngstown, Ohio
4.55 *K1*	5.30 *K1*				6.35 *K1*	7.50 *K1*			4.90 *K1*				Fontana, Cal.
3.70 *C7*													Geneva, Utah
													Kansas City, Mo.
4.30 *C7*		5.55 *C7*						5.40 *C7*	4.90 *B2,C7*	$9.20 *C7*	$7.90 *C7*		Los Angeles, Cal.
									4.35 *C6*				Minnequa, Colo.
4.30 *C7*	5.30 *C7*	5.55 *C7*											San Francisco, Cal. Niles, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.60 *R3,T2*	4.35 *T2*	4.80 *R3,T2*			5.40 *T2*			4.75 *R3*	4.10 *R3,T2*	$8.55 *T2*	$7.25 *T2*		Birmingham, Ala. Alabama City, Ala.
									4.50 *S2*				Houston, Texas

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfgr's. Bright
EAST	Bethlehem, Pa.				4.30 *B3*	5.40 *B3*	5.55 *B3*					
	Buffalo, N. Y.	3.70 *B3,R3*	3.70 *B3,R3*	4.60 *B5*	4.40 *B3,R3*	5.40 *B3*	5.55 *B3*	3.70 *B3*				4.85 *W6*
	Claymont, Del.							4.15 *C4*		4.85 *C4*		
	Coatesville, Pa.							4.15 *L4*		5.25 *L4*		
	Conshohocken, Pa.							4.15 *A2*	4.75 *A2*	5.05 *A2*	5.90 *A2*	
	Harrisburg, Pa.							6.30 *C3*	6.30 *C3*			
	Hartford, Conn.			5.10 *R3*		5.85 *R3*						
	Johnstown, Pa.	3.70 *B3*	3.70 *B3*		4.30 *B3*		5.55 *B3*	3.70 *B3*		4.75 *B3*	5.65 *B3*	4.85 *B3*
	Newark, N. J.			5.00 *W10*		5.75 *W10*						
	New Haven, Conn.											
	Phoenixville, Pa.											
	Putnam, Conn.			5.10 *W10*								
	Sparrows Point, Md.		3.70 *B3*					3.70 *B3*		4.75 *B3*	5.65 *B3*	4.95 *B3*
	Worcester, Mass.					5.75 *A5*						5.15 *A5,W6*
	Trenton, N. J.											
MIDDLE WEST	Alton Ill.	4.15 *L1*										5.05 *L1*
	Ashland, Ky.							3.70 *A7*				
	Canton-Massillon	3.70 *R3*		4.55 *R3,R2*	3.95 *T5* 4.30 *R3*	4.90 *T5* 5.40 *R3,R2*						
	Chicago, Ill.	3.70 *U1,R3, W8*	3.70 *R3*	4.55 *A5,B5, W8,W1*	4.30 *U1,R3 W8*	5.40 *R3,W8 W10,B5,L2* 5.45 *A5*		3.70 *U1,W8*	4.75 *U1*	4.75 *U1*	5.65 *U1*	5.10 *W7* 4.85 *R3, A5, K2, N4*
	Cleveland, Ohio	3.70 *R3*	3.70 *R3*	4.55 *A5,C13*		5.45 *A5*	5.55 *R3,J3*	3.70 *R3,J3*	4.75 *J3*		5.65 *R3,J3*	4.85 *A5,C13*
	Detroit, Mich.	3.85 *R5*		4.70 *P8,R5* 4.80 *P3*	4.45 *R5* 4.65 *G3*	5.50 *R5* 5.55 *P8* 5.60 *P3*						
	Duluth, Minn.											4.85 *A5*
	Gary, Ind. Harbor, Indiana	3.70 *U1, Y1, I3*	3.70 *U1,I3, Y1*	4.55 *R3,M5, L2*	4.30 *U1,I3, Y1*	5.40 *R3,M5, L2*	5.55 *U1,I3* 6.05 *Y1*	3.70 *U1,I3, Y1*	4.75 *I3*	4.75 *U1*	5.65 *U1,I3* 6.15 *Y1*	5.10 *M4*
	Granite City, Ill.							4.40 *G2*				
	Kokomo, Ind.											4.95 *C9*
	Middletown, Ohio											
	Niles, Ohio Sharon, Pa.							3.95 *S1*		5.20 *S1*	5.70 *S1*	
	Pittsburgh, Pa.	3.70 *U1,J3*	3.70 *U1,J3*	4.55 *R3,A5, J3,S8,W10, C8*	4.30 *U1,C11*	5.40 *C11,S8, W10,C8,A5*	5.55 *U1,J3*	3.70 *U1,J3*	4.75 *U1*	4.75 *U1*	5.65 *U1,J3*	4.85 *A5,J3* 5.23 *P6*
	Portsmouth, Ohio											5.25 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	3.85 *W3*						4.00 *W3,W5*				
	Youngstown, Ohio	3.70 *U1,R3, Y1*	3.70 *U1,R3, Y1*	4.55 *Y1,F2*	4.30 *U1, Y1, C10*	5.40 *Y1,C10, F2*	5.55 *U1* 6.05 *Y1*	3.70 *U1,R3, Y1*			5.65 *R3* 6.15 *Y1*	4.85 *Y1*
WEST	Fontana, Cal.	4.40 *K1*	4.40 *K1*		5.35 *K1*		6.60 *K1*	4.30 *K1*		5.70 *K1*	6.25 *K1*	
	Geneva, Utah							3.70 *C7*			5.65 *C7*	
	Kansas City, Mo.	4.30 *S2*	4.30 *S2*		4.90 *S2*							5.45 *S2*
	Los Angeles, Cal.	4.40 *C7,B2*	4.40 *C7,B2*		5.35 *B2*		6.25 *B2*					5.80 *C7,B2*
	Minnequa, Colo.	4.15 *C6*	4.50 *C6*					4.50 *C6*				5.10 *C6*
	San Francisco, Cal. Niles Cal.	4.45 *B2* 4.40 *C7* 4.65 *P9*	4.45 *B2* 4.40 *C7* 4.65 *P9*				6.30 *B2*					5.80 *C7*
	Seattle, Wash.	4.45 *B2*	4.45 *B2*				6.30 *B2*	4.60 *B2*			6.55 *B2*	
SOUTH	Atlanta, Ga.	4.25 *A8*	4.25 *A8*									5.10 *A8*
	Birmingham, Ala. Alabama City, Ala.	3.70 *R3,T2*	3.70 *R3,T2*				5.55 *T2*	3.70 *R3,T2*			5.65 *T2*	4.85 *R3,T2*
	Houston, Tex.	4.10 *S2*	4.10 *S2*		4.70 *S2*			4.10 *S2*				5.25 *S2*

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin Inc., Harvey, Ill.

C1 California Cold Rolled Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Steel Corp., Claymont, Del.
C5 Cold Metal Products Co., Youngstown
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia-Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Glassport, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago

K1 Kaiser Corp., Oakland, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLauth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Co., Pittsburgh
N3 Niles Rolling Mills Co., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.

O1 Oliver Iron & Steel Co., Pittsburgh

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co. (John A.), Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sloss Sheffield Steel & Iron Co., Birmingham
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.
S11 Seidelhuber Steel Rolling Mills, Seattle

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal, Iron & R. R. Co., Birmingham
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Steel Co., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.

U1 United States Steel Co., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Co., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wycoff Steel Co., Pittsburgh

Y1 Youngstown Sheet & Tube Co., Youngstown

Steel Prices

Base price, f.o.b., dollars per 100 lb.

WAREHOUSES		Sheets			Strip		Plates	Shapes	Bars		Alloy Bars			
Cities	Delivery Charge*	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As Rolled	Cold-Drawn A 4140 Annealed
Baltimore	$.20	5.54–6.44	6.84–7.05	8.07	6.07	.....	6.17	6.17	6.05	6.67	.....	.....	.....	.....
Birmingham	.15	5.59	6.37	7.20–7.35[1]	5.54	.....	5.85	5.70	5.52	7.60	.....	.....	.....	.....
Boston	.20	6.25	7.03	8.24–8.25	6.20	7.74–8.70	6.38–6.63	6.25	6.10–6.14	6.61–6.92	10.25–10.30	10.55–10.63	11.95	12.15–12.28
Buffalo	.20	5.50–5.54	6.28–6.32	8.06 8.20	5.86	.....	5.89–5.98	5.80–5.82	5.52–5.55	6.18–6.45	10.15	10.45–10.52	11.80	12.10–12.17
Chicago	.20	5.54	6.32	7.65–7.70	5.49	.....	5.65–5.70	5.65	5.47	6.05–6.30	.....	10.10	.....	11.75
Cincinnati	.15	5.87	6.39	8.12	5.79	.....	6.17	6.12	5.77	6.66	.....	10.52	.....	12.22
Cleveland	.20	5.52–5.54	6.32	7.79–7.96	5.65–5.88	.....	5.82–5.83	5.95–6.16	5.54–5.61	6.15–6.40	.....	10.21	.....	11.86
Detroit	.20	5.73–5.74	6.49	7.96–8.19	5.78	.....	6.04–6.17	6.12	5.76	6.60	.....	10.37	.....	12.12
Houston	.20	6.35–6.58	7.37–8.09	8.57	6.15	.....	6.39–6.42	6.32–6.35	6.38	8.38–8.63	10.95	11.12–11.25	11.40	12.62–12.90
Indianapolis	del'd.	5.94	6.72	8.25	5.89	.....	6.10	6.05	5.87	6.80	.....	10.50	.....	.....
Kansas City	.20	6.22–6.40	7.64–7.68	8.66–8.70	6.10–6.90	7.81	6.38–6.74	6.43–6.48	6.20–6.77	7.01–7.22	10.00	10.10	11.50	11.80
Los Angeles	.20	6.35	8.15–8.45	9.25–9.35	6.40	10.45	6.30–6.50	6.30	6.25–6.35	8.15	11.30	11.60	13.05	13.00
Memphis	.10	6.25	7.03	7.51	6.20	.....	6.36	6.36–6.61	6.33–6.57	7.11	.....	.....	.....	.....
Milwaukee	.20	5.71	6.48	7.82–7.86	5.66	.....	5.81–5.87	5.82	5.64	6.31–6.57	.....	10.17	.....	.....
New Orleans	.15	5.98	7.01	8.26	5.93	.....	6.09	6.09	5.91	7.02	.....	.....	.....	.....
New York	.30	6.09–6.52	6.90–7.08	8.07–8.33	6.36–7.19	7.67	6.47–6.88	6.39–6.40	6.22–6.42	7.03–7.58	10.45	10.49–10.75	12.10	12.14–12.40
Norfolk	.20	6.68	.....	.....	6.33	.....	6.20	6.20	5.95	7.30	.....	.....	.....	.....
Philadelphia	.25	5.84–6.07	6.80–7.22	7.95–8.00	6.04–6.08	7.15	6.05–6.19	5.86–6.09	6.14–6.27	6.96–7.16	9.82–10.17	10 24–10 47	11.82	11.89–12.12
Pittsburgh	.20	5.54	6.32	7.70–8.05	5.59–5.62	.....	5.65–5.70	5.65	5.47	6.15–6.40	.....	10.10	.....	11.75
Portland	.20	7.25	8.64–9.00	9.10–9.25	7.30	.....	6.80	7.88	7.00	8.65	.....	.....	.....	.....
Salt Lake City	.20	7.95	.....	9.80–10.35	8.00	.....	7.45	7.60	7.95	.....	.....	.....	.....	.....
San Francisco	.15	6.51–6.64	7.88–8.23	9.15–9.25	6.45–6.60	10.45	6.49–6.50	6.30–6.42	6.32–6.34	8.15–8.20	11.30	11.30	13.05	13.50
Seattle	.20	6.96–7.01	7.84–8.98	9.50	7.45–7.55	.....	6.74–6.86	6.32–6.52	6.70–6.88	8.89–8.91	.....	.....	.....	.....
St. Louis	.20	5.84	6.62–7.15	7.95–8.00	5.79	7.66–8.15	6.05–6.10	6.05–6.22	5.77–5.80	6.45–6.70	10.08	10.40	11.73	12.05
St. Paul	.15	6.14	6.92	8.36	6.09	.....	6.25	6.25	6.07	6.75	.....	.....	.....	.....

* Metropolitan area delivery.

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

EXCEPTIONS: (1) 500 to 1499 lb.

STAINLESS STEELS

Base price, cents per lb, f.o.b. mill.

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs, billets, rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs, die blocks, rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	23.50
Billets, forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars, wires, structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip, hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip, cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—*Sheets*: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; McKeesport, Pa., *U1*; Washington, Pa., *W2*; (type 316 add 4.5¢) *J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Ft. Wayne, *J4*; Lockport, N. Y., *R4*.

Strip: Midland, Pa., *C11*; Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; (type 316 add 4.5¢); W. Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Canton-Massillon, O., *R3*; Middletown, O., *A7*; Harrison, N. J., *D3*; Youngstown, *C5*; Lockport, N. Y., *S4*; Sharon, Pa., *S1* (type 301 add ¼¢); Butler, Pa., *A7*; Wallingford, Conn., *W1*.

Bars: Baltimore, *A7*; Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1, F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R3*; Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Lockport, N. Y., *S4*; Canton, O., *T5*; Ft. Wayne, *J4*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*.

Plates: Brackenridge, Pa., *A3* (type 416 add ½¢); Butler, Pa., *A7*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Lockport, N. Y., *S4*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*.

Forged discs, die blocks, rings: Pittsburgh, *C11*; Syracuse, *C11*; Ferndale, Mich., *A3*; Washington, Pa., *J2*.

Forging billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*.

ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series.

WASHINGTON STEEL—Slightly lower on 300 series except where noted.

PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS					
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½-3 In.		3½-4 In.	
STANDARD	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
T. & C.																				
Sparrows Pt. *B3*	34.0	12.0	37.0	16.0	39.0	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0	....	....	....	....	....	....
Youngstown *R3*	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0	....	....	....	....	....	....
Oakland *K1*	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0	....	....	....	....	....	....
Pittsburgh *J3*	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	8.0	32.5	11.5	34.5	13.5
Pittsburgh *N2*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
Alton, Ill. *L1*	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0	....	....	....	....	....	....
Sharon *M3*	36.0	13.0	39.0	17.0	41.5	20.0	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.0	....	....	....	....	....	....
Pittsburgh *N1*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	....	32.5	....	34.5	....
Wheeling *W5*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	....	....	....	....	....	....
Wheatland *W4*	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	....	....	....	....	....	....
Youngstown *Y1*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
Indiana Harbor *Y1*	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0	....	....	....	....	....	....
Lorain, *N2*	36.0	19.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
EXTRA STRONG PLAIN ENDS																				
Sparrows Pt. *B3*	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0	....	....	....	....	....	....
Youngstown *R3*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	....	....	....	....	....	....
Oakland *K1*	24.5	4.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0	....	....	....	....	....	....
Pittsburgh *J3*	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0	36.5	15.5
Pittsburgh *N2*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.5
Alton, Ill. *L1*	32.5	12.0	36.5	16.0	38.5	19.5	39.0	20.0	39.5	21.0	40.0	21.5	40.5	22.0	....	....	....	....	....	....
Sharon *M3*	35.5	14.0	39.5	18.0	41.5	21.0	42.0	21.5	42.5	22.0	43.0	22.5	43.5	23.0	....	....	....	....	....	....
Pittsburgh *N1*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	....	33.0	....	36.5	....
Wheeling *W5*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	....	....	....	....	....	....
Wheatland *W4*	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	....	....	....	....	....	....
Youngstown *Y1*	35.5	15.0	39.5	19.0	41.0	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	26.0	29.0	10.0	33.0	14.0	36.5	17.5
Indiana Harbor *Y1*	34.5	14.0	38.5	18.0	40.5	21.0	41.0	22.0	41.5	23.0	42.0	23.5	42.5	24.0	....	....	....	....	....	....
Lorain, *N2*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.5

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on oven cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢.

Threads only, buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 3½ pts. higher discount. Buttweld jobbers' discount, 5 pct. East St. Louis zinc price now 15.0¢.

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$14.50 to $15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$17.50 to $18.00
Foundry, oven coke	
Buffalo, del'd	$26.58
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

ELECTRICAL SHEETS

22 Ga. H-R cut length F.o.b. Mill Cents Per Lb.	Armature	Elec.	Meter	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech Bottom *W5*	....	7.25	8.50	9.30	9.85	10.40	11.10
Brackenridge *A3*	....	7.25	8.50	9.30	9.85	....	....
Granite City *G2*	....	7.95	9.20	....	....	....	....
Ind. Harbor *I3*	6.75	7.25	....	....	....	....	....
Mansfield *E2*	7.25	7.75	9.00	9.80	....	....	....
Niles, O. *N3*	7.05	7.55	....	....	....	....	....
Vandergrift *U1*	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Warren, O. *R3*	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Zanesville *A7*	6.75	7.25	8.50	9.30	9.85	10.40	11.10

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery	Low Phos. Charcoal
Bethlehem *B3*	54.00	54.50	55.00	55.50	....	....	....
Birmingham *R3*	48.38	48.88	....	....	....	....	....
Birmingham *W9*	48.38	48.88	....	....	....	....	....
Birmingham *S5*	48.38	48.88	....	....	....	....	....
Buffalo *R3*	52.00	52.50	53.00	....	....	....	....
Buffalo *H1*	52.00	52.50	53.00	....	....	63.75	....
Chicago *I4*	52.00	52.50	52.50	53.00	....	....	....
Cleveland *A5*	52.00	52.50	52.50	53.00	57.00	....	....
Cleveland *R3*	52.00	52.50	52.50	....	....	....	....
Daingerfield, Tex. *L3*	48.00	48.50	48.50	....	....	....	....
Duluth *I4*	52.00	52.50	52.50	53.00	....	....	....
Erie *I4*	52.00	52.50	52.50	53.00	....	....	....
Everett, Mass. *M6*	....	59.75	60.25	....	....	....	....
Fontana *K1*	58.00	58.50	....	....	....	....	....
Geneva, Utah *U1, Y1*	52.00	52.50	52.50	53.00	....	....	....
Granite City, Ill. *K3*	53.90	54.40	54.90	....	....	....	....
Hubbard, Ohio *Y1*	52.00	52.50	52.50	....	....	....	....
Ironton, Utah *C7*	52.00	52.50	....	....	....	....	....
Jackson, Ohio *J1, G1*	....	....	....	....	....	62.50	....
Lyle, Tenn. *T3*	....	....	....	....	....	....	66.00
Monessen *P6*	54.00	....	....	....	....	....	....
Neville Island *P4*	52.00	52.50	52.50	53.00	....	....	....
Pittsburgh *U1*	52.00	....	....	53.00	....	....	....
Sharpsville *S3*	52.00	52.50	52.50	53.00	....	....	....
Steelton *B3*	54.00	54.50	55.00	55.50	60.00	....	....
Swedeland *A2*	56.00	56.50	57.00	57.50	....	....	....
Toledo *I4*	52.00	52.50	52.50	53.00	....	....	....
Troy, N. Y. *R3*	54.00	54.50	55.00	....	60.00	....	....
Youngstown *Y1*	52.00	52.50	52.50	53.00	....	....	....
N. Tonawanda, N. Y. *T1*	....	52.50	53.00	....	....	....	....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base, (1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add $1.50 per net ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	22.67	26.66	21.99	25.86
	2½	12	30.48	35.84	29.57	34.76
	3	12	33.90	39.90	32.89	38.70
	3½	11	42.37	49.89	41.10	48.39
	4	10	52.60	61.88	51.03	60.02
National Tube	2	13	21.62	26.48	....	....
	2½	12	29.65	36.32	....	....
	3	12	34.00	41.64	....	....
	3½	11	40.34	49.41	....	....
	4	10	51.21	62.72	....	....
Pittsburgh Steel	2	13	....	27.08	....	....
	2½	12	30.49	37.15	....	....
	3	12	34.95	42.50	....	....
	3½	11	41.48	50.54	....	....
	4	10	52.65	64.16	....	....

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	$105.30 to $108.80
6 to 24-in., del'd N.Y...	108.50 to 109.50
6 to 24-in., Birmingham	91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipment less	$123.00 to $130.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, Conn. *S7*	5.35	6.80	7.40	9.35	11.65
Carnegie, Pa. *S9*	....	6.80	7.40	9.35	11.65
Cleveland *A5*	4.65	6.45	7.40	9.35	11.65
Detroit *D1*	5.60	6.65	7.25	....	....
New Castle, Pa. *B4*	5.35	6.80	7.40	9.35	....
New Haven, Conn. *D1*	5.85	6.75	7.35	....	....
Sharon, Pa. *S1*	5.35	6.80	7.40	9.35	11.65
Weirton, W. Va. *W3*	5.35	6.80	7.40	9.35	11.65
Worcester, Mass. *A5*	4.95	6.75	7.70	9.65	11.95
Youngstown *C5*	....	6.80	7.40	9.35	11.65

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails Base Col.	Woven Wire Fence 9-15½ ga. Base Col.	Fence Posts Base Col.	Single Loop Bale Ties Base Col.	Twisted Barbless Wire Base Col.	Gal. Barbed Wire Base Col.	Merch. Wire Ann'ld ¢/lb	Merch. Wire* Gal. ¢/lb.
Alabama City *R3*	118	126	....	123	....	136	5.70	5.95
Aliquippa, Pa. *J3*	118	132	....	....	136	140	5.70	6.15
Atlanta *A8*	121	133	....	126	126	143	5.95	6.40
Bartonville *K2*	118	130	....	123	143	143	5.70	6.15
Buffalo *W6*	....	....	....	....	....	....	4.85	....
Cleveland *A6*	125	....	....	....	....	....	....	....
Cleveland *A5*	....	....	....	....	....	....	5.70	6.10
Crawfrdsvl. *M4*	....	132	....	....	....	145	5.95	6.40
Donora, Pa. *A5*	118	130	....	123	140	140	5.70	6.15
Duluth *A5*	118	130	....	123	140	140	5.70	6.15
Fairfield, Ala. *T2*	118	130	....	123	....	140	5.70	6.15
Houston *S2*	126	138	....	....	....	148	6.10	6.55
Johnstn., Pa. *B3*	118	130	....	....	140	....	5.70	6.15
Joliet, Ill. *A5*	118	130	....	123	....	140	5.70	6.15
Kokomo, Ind. *C9*	120	132	....	125	138	142	5.80	6.05
Los Angeles *B2*	....	....	....	....	....	....	6.65	....
Kansas City *S2*	130	....	....	135	....	152	6.30	6.75
Minnequa *C6*	123	138	130	128	146	146	5.95	6.45
Monessen *P6*	124	135	....	....	....	145	5.95	6.40
Moline, Ill. *R3*	....	....	136	....	....	....	....	....
Pittsburg, Cal. *C7*	137	....	....	147	156	160	6.65	6.80
Portsmouth *P7*	124	137	....	....	147	147	6.10	6.60
Rankin, Pa. *A5*	118	130	....	....	140	140	5.70	6.15
So. Chicago *R3*	118	126	140	123	....	136	5.70	5.95
S. San Fran *C6*	....	....	....	147	....	160	6.65	7.10
Sparrows Pt. *B3*	120	....	....	125	142	142	5.80	6.25
Sterling, Ill. *N4*	118	130	....	123	140	140	5.70	6.15
Struthers, O. *Y1*	....	....	....	....	....	....	5.70	6.15
Torrance, Cal. *C7*	138	....	....	....	....	....	6.65	....
Worcester *A5*	124	....	....	....	....	....	6.00	6.45
Williamsport, Pa. *S10*	....	....	150	....	....	....	....	....

Cut Nails .carloads, base $7.35 per 100 lb. (less 20¢ to, jobbers), at Conshohocken, Pa., (*A2*), Wheeling, W. Va. (*W5*), $7.15.

* Alabama City and So. Chicago don't include zinc extra

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Axles	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *Ul*	3.60	4.00	4.70	....	....	....	....	....
Chicago *R3*	....	....	....	6.15	....	....	....	....
Cleveland *R3*	....	....	....	....	....	9.35	....	....
Ensley *T2*	3.60	4.00	....	....	....	....	....	....
Fairfield *T2*	....	4.00	4.70	6.15	5.60	....	4.50	9.80
Gary *Ul*	3.60	4.00	....	....	....	....	4.50	....
Ind. Harbor *I3*	3.60	....	4.70	6.15	5.60	....	4.50	....
Johnstown *B3*	....	4.00	....	....	5.60	....	....	....
Joliet *Ul*	....	4.00	4.70	....	....	....	....	....
Kansas City *S2*	....	....	....	6.40	....	....	....	9.85
Lackawanna *B3*	3.60	4.00	4.70	....	....	....	4.50	....
Lebanon *B3*	....	....	....	6.15	....	9.35	....	9.85
Minnequa *C6*	3.60	4.50	4.70	6.15	....	....	4.50	9.85
Pittsburgh *R3*	....	....	....	....	....	9.35	....	....
Pittsburgh *Ol*	....	....	....	....	....	9.35	....	9.85
Pittsburgh *P5*	....	....	....	....	....	....	....	9.85
Pittsburgh *J3*	....	....	....	6.15	....	....	....	....
Pitt'g., Cal. *C7*	....	....	....	....	....	....	4.65	....
Seattle *B2*	....	....	....	6.65	....	....	4.65	....
Steelton *B3*	3.60	....	4.70	....	....	....	4.50	....
Struthers *Y1*	....	....	....	6.15	....	....	....	....
Torrance *C7*	....	....	....	....	....	....	4.65	....
Youngstown *R3*	....	....	....	6.15	....	....	....	....

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.505
18	4	1	—	5	$2.13
18	4	2	—	—	$1.65
1.5	4	1.5	8	—	81.0¢
6	4	2	6	—	96.5¢

High-carbon chromium ..... 63.5¢
Oil hardened manganese ..... 35¢
Special carbon ..... 32.5¢
Extra carbon ..... 27¢
Regular carbon ..... 23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

CLAD STEEL

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa. *L4*	*29.5	
Washington, Pa. *J3*	*29.5	
Claymont, Del. *C4*	*28.00	
Conshohocken, Pa. *A2*		*27.50
New Castle, Ind. *I2*	*29.77	*26.24
Nickel-carbon		
10 pct Coatesville, Pa. *L4*	32.5	
Inconel-carbon		
10 pct Coatesville, Pa. *L4*	40.5	
Monel-carbon		
10 pct Coatesville, Pa. *L4*	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. *A4*		77.00
Aluminized steel sheets, hot dip, Butler, Pa. *A7*		7.75

* Includes annealing and pickling, or sandblasting.

ELECTRODES

Cents per lb, f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
	GRAPHITE	
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2½	24, 30	23.15
2	24, 30	25.36
	CARBON	
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF_2 content:
70% or more $43.00
60% or less 40.00

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

Pct Off List

	Reg. Less Keg.	Reg. K.	Hvy. Less Keg.	Hvy. K.
½ in. & smaller	15	38½	15	28½
9/16 in. & ⅝ in.	12	25	6½	21
¾ in. to 1½ in. inclusive	9	23	1	16½
1⅝ in. & larger	7½	22	1	16½

Nuts, Hot Pressed—Hexagon

½ in. & smaller	26	37	22	34
9/16 in. & ⅝ in.	16½	29½	6½	21
¾ in. to 1½ in. inclusive	12	25	2	17½
1⅝ in. & larger	8½	23	2	17½

Nuts, Cold Punched—Hexagon

½ in. & smaller	26	37	22	34
9/16 in. & ⅝ in.	23	35	17½	30½
¾ in. to 1½ in. inclusive	19½	31½	12	25
1⅝ in. & larger	8½	23	2	17½

Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
½ in. & smaller	35	45	28½	29½
9/16 in. & ⅝ in.	23	35	17½	30½
¾ in. to 1½ in. inclusive	24	36	15	28½
1⅝ in. & larger	13	26	8½	23
	Light			
7/16 in. & smaller	35	45		
½ in. thru ⅝ in.	28½	39½		
¾ in. to 1½ in. inclusive	26	37		

Stove Bolts *Pct Off List*

Packaged, steel, plain finished. 48—10
Packaged, plate finish ..... 31—10
Bulk, plain finish** 62*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets *Base per 100 lb*

½ in. & larger $7.85

Cap and Set Screws

(In bulk) *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright	54
⅝ in. thru 1 in. up to & including 6 in.	48
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat	46
⅝ in. thru 1 in. up to & including 6 in.	41
Milled studs	35
Flat head cap screws, listed sizes	16
Fillister head cap, listed sizes	34
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	53

Machine and Carriage Bolts

Pct Off List

	Less Case	C.
½ in. & smaller x 6 in. & shorter	15	28½
9/16 in. & ⅝ in. x 6 in. & shorter	18½	30½
¾ in. & larger x 6 in. & shorter	17½	29½
All diam. longer than 6 in.	14	27½
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	....

REFRACTORIES

Fire Clay Brick

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5) $94.00
No. 1 Ohio 88.00
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00
No. 2 Ohio 79.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50) 12.75

Silica Brick

Mt. Union, Pa., Ensley, Ala. $94.00
Childs, Pa. 99.00
Hays, Pa. 100.00
Chicago District 104.50
Western Utah and Calif. 111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago ..... 11[illegible].10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 16.50
Silica cement, net ton, bulk, Hays, Pa. 18.70
Silica cement, net ton, bulk, Ensley, Ala. 17.60
Silica cement, net ton, bulk, Chicago District 17.60
Silica cement, net ton, bulk, Utah and Calif. 24.70

Chrome Brick *Per Net Ton*

Standard chemically bonded Balt, Chester $82.00

Magnesite Brick

Standard, Baltimore $104.00
Chemically bonded, Baltimore 93.00

Grain Magnesite *St. ⅜-in. grains*

Domestic, f.o.b. Baltimore in bulk fines removed $62.70
Domestic, f.o.b. Chewalah, Wash., in bulk 36.30
in sacks 41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ ... $13.75

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. 1952 *prices not yet established.* 1951 *prices were:*

Old range, bessemer $8.70
Old range, nonbessemer 8.55
Mesabi, bessemer 8.45
Mesabi, nonbessemer 8.30
High phosphorus 8.30

After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in Lake vessel rates, upper Lake rail freights, dock handling charges and taxes thereon.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags .. 7.4¢ to 9.0¢
Canadian sponge iron, del'd, in East ..... 10.00¢
Domestic sponge iron, 98+% Fe, carload lots ..... 15.5¢ to 17.0¢
Electrolytic iron, annealed, 99.5+% Fe ..... 42.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe ..... 53.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe. 63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe. 83.0¢ to $1.41
Aluminum ..... $1.5¢
Brass, 10 ton lots ..... 30.00¢ to 33.25¢
Copper, electrolytic. 10.75¢ plus metal value
Copper, reduced ... 10.00¢ plus metal value
Cadmium, 100-199 lb 95¢ plus metal value
Chromium, electrolytic, 99% min., and quantity, del'd $3.50
Lead ..... 7.5¢ to 12.0¢ plus metal value
Manganese ..... 57.0¢
Molybdenum, 99% $3.75
Nickel, unannealed ..... 88.0¢
Nickel, annealed ..... 95.0¢
Nickel, spherical, unannealed ..... 93.0¢
Silicon ..... 38.5¢
Solder powder .. 7.0¢ to 9.0¢ plus met. value
Stainless steel, 302 ..... $2.00¢
Stainless steel, 316 ..... $1.10
Tin ..... 14.00¢ plus metal value
Tungsten, 99% (65 mesh) .. $6.00
Zinc, 10 ton lots ..... 23.0¢ to 30.5¢

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C	30.50	0.20% C	29.50
0.10% C	30.00	0.50% C	29.25
0.15% C	29.75	1.00% C	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			22.00
62-66% Cr, 4-6% C, 6-9% Si			22.60

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	$1.14
0.50% max. C	1.10
9 to 11% C	1.08

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

CMSZ

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	20.75
Less ton lots	22.00

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O.

F.o.b. Johnstown, Pa.	$185
F.o.b. Sheridan, Pa.	$187
F.o.b. Etna, Clairton, Pa.	$185

$2.00 for each 1% above 82% Mn, penalty. $2.15 for each 1% below 78%. Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.95
Ton lots	12.55

Spiegeleisen

Contract prices gross ton; lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$74.00	$75.00
Pbh. or Chicago	74.00	75.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	34.75
Ton lots	36.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.7% max. C, 0.06% P, 90% Mn	26.25	28.10	29.20
0.07% max. C	25.75	27.60	28.80
0.15% max. C	25.25	27.10	28.30
0.30% max. C	24.75	26.60	27.80
0.50% max. C	24.25	26.10	27.30
0.75% max. C 7.00% max. Si	21.25	23.10	24.30

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carloads	9.90
Ton lots	11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.15

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn 19.15¢

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	9.90
Ton lots	11.55
Briquet, contract basis carlots, bulk delivered, per lb of briquet	11.15
Ton lots	12.75

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $92.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $90.00. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	21.70
97% Si, 1% Fe	22.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.95
Ton lots	8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
90.95% Si			17.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrocolumbium, 50-60% 2 in. x D, contract basis, delivered, per pound contained Cb.

Ton lots	$4.90
Less ton lots	4.95

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $3.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo. $1.33

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00

10 tons to less carload $75.00

Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50

Less ton lots 1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $177.00

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W5, ton lots, delivered $5.00

Ferrovanadium, 35-55% contract basis, delivered, per pound, contained V.

Openhearth	$3.00-$3.10
Crucible	3.10- 3.20
High speed steel (Primos)	3.20- 3.25

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. $1.14

bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump	14.50¢
Ton lots, bulk lump	15.75¢
Less ton lots, lump	16.25¢

Vanadium Pentoxide, 86-89% V_2O_5 contract basis, per pound contained V_2O_5 $1.28

Zirconium, 35-40%, contract basis f.o.b. plant, freight allowed, per pound of alloy.

Ton lots	21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.

Carload, bulk	7.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.... $5.25

Bortam, f.o.b. Niagara Falls

Ton lots, per pound	45¢
Les ton lots, per pound....	50¢

Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots, per pound	10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots.... $1.20

F.o.b. Wash., Pa.; 100 lb up

10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.

No. 1	$1.00
No. 6	68¢
No. 79	50¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe. 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd

Ton lots	$1.46
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.

Less ton lots	$1.80

Silcaz, contract basis, delivered.

Ton lots	45.00¢

The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

Round About—The steel strike has taken its toll indirectly on the used machinery market in the Cleveland area. Slowdown of industrial activity due to lack of steel or inability to obtain component parts has caused manufacturers to postpone buying until the material supply improves.

Another factor adding to market slowness is the number of plants closed down for vacation. As a result sales of used machine tools have fallen off and inquiries are less numerous.

Hardest hit by the lull are the small dealers. For some, business is almost at a standstill. With buyers staying out of the market until the strike ends and becoming more particular in their requirements, only the large dealers can build sufficient inventory to satisfy shoppers. Small dealers with stocks at low ebb haven't the capital to build up large enough inventories to attract buyers.

Too Risky — With the market moving so slowly small dealers can't afford to tie up capital for any extended period of time. The chance that they might not be able to move the tools is too great. Bigger dealers are able to take advantage of the greater number of machine tools now being made available. But they have to hold onto the tools and hope for a sale at a later date.

Some sources look for an upturn in the market this fall. Their optimism is based on continuance of government spending for the defense programs and on the expectation that industry in general will boost production to make up for time lost during the steel strike. Supply pipelines will have to be replenished first, however.

Slow Going—As far as government business is concerned, the greatest lag in the Cleveland area has been noted in shell working equipment. The widely publicized shutdown of shell plants due to lack of shell steel has stilled demand for all types of shell working units.

Buying for the jet engine program is still steady. But one of the least publicized programs that is a source of strength in the used market is the helicopter program which has created a demand for gear making equipment.

New York's used tool market mirrors conditions reported in Cleveland. What little demand there is has been directed toward heavy duty machinery. One dealer sized up the situation succinctly, calling it "just plain lousy."

Intangibles — Inactivity in the area cannot be attributed to any one factor. It seems to result from a combination of the market-depressing effects of the steel strike, summer heat and vacations. Dealers were hoping for a comeback now that the strike is over but were not overly confident that this much hoped for reversal of trend would develop.

Machinery Dealers National Assn. is expected to increase the tempo of its activity after the comparative quiet of the summer months. In line with this, Elden Watts has been added to Executive Director Randy Vinson's staff as an assistant. With Mr. Watts handling much of the association's detail work, Mr. Vinson hopes to be able to carry out his planned energetic program of attending all MDNA chapter meetings when they are resumed this fall.

Renegotiation—One of the first activities slated for MDNA action is establishment of a Renegotiation Committee to study industry problems in this field. The committee will also advise the government about renegotiation difficulties peculiar to the used machine tool business.